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Abstract

Despite a vast empirical literature that assesses the impact of financial integration on the economy, evidence of substantial welfare gains from consumption risk sharing remains elusive. While maintaining the usual cross-country perspective of the literature, this paper explicitly accounts for household heterogeneity and thus relaxes three restrictive assumptions that have featured prominently in the past. By making use of international household-level data and a subjective measure of financial well-being, the analysis takes into account idiosyncratic shocks to the household, allows for a household-specific evaluation of labor income risk and facilitates explicit tests of the underlying insurance channels. Using two balanced panels of more than 17,000 and 31,000 households from up to 22 European countries over the periods 1994-2000 and 2004-2008, respectively, I first document a negative welfare effect arising from labor income risk. I then show that financial integration significantly mitigates this effect for the average household in the sample. Finally, I examine the underlying insurance channels and find that, during the 1990s, the benefits of financial integration occurred primarily in the form of better access to credit for households with only weak ties to the financial system. During the 2000s, however, the largest gains from financial integration emerged on the asset side and benefited in particular households that had already invested in financial markets.

JEL classification: E21, F3, I31
Bank classification: International topics; International financial markets; Labour markets; Recent economic and financial developments

Résumé

Malgré la multitude de travaux empiriques consacrés à l'incidence de l'intégration financière sur l'économie, il reste difficile de confirmer les gains de bien-être considérables censés provenir du partage du risque de consommation. Tout en gardant l'approche multipays d'autres recherches, cette étude rend en outre explicitement compte de l'hétérogénéité des ménages et assouplit ainsi trois hypothèses restrictives habituellement retenues. Exploitant des données internationales sur les ménages et une mesure subjective du bien-être financier, l'analyse intègre les chocs idiosyncrasiques subis par les ménages, leur permet d'autoévaluer le risque d'exposition de leurs revenus de travail et facilite l'emploi de tests formels pour découvrir les mécanismes d'assurance sous-jacents. À l'aide de deux échantillons équilibrés, composés respectivement de plus de 17 000 et 31 000 ménages européens représentant jusqu'à 22 pays, l'on met tout d'abord en évidence l'effet négatif créé sur le bien-être par le risque qui entoure les revenus de travail, pour les périodes 1994-2000 et 2004-2008. Il est ensuite montré que l'intégration financière réduit sensiblement cet effet chez le ménage type de l'échantillon. Enfin, un examen des mécanismes d'assurance sous-jacents mène à un double constat : durant les années 1990, les bénéfices de l'intégration financière se sont surtout traduits par un meilleur accès au crédit pour les ménages ayant peu de liens avec le système financier; en revanche dans les années 2000, la plus grande

incidence s'est produite du côté des actifs, ce qui a profité aux ménages déjà détenteurs de placements financiers.

Classification JEL : E21, F3, I31
Classification de la Banque : Questions internationales; Marchés financiers internationaux; Marchés du travail; Évolution économique et financière récente

Non-Technical Summary

Financial integration—defined as an increase in cross-border asset and liability holdings—in advanced countries has increased extensively over the past two decades. Despite a vast empirical literature that assesses the impact of financial integration on the economy, evidence of substantial welfare gains through risk sharing remains elusive. This observation is at odds with theoretical predictions that state that welfare should rise when households and firms have greater access to international financial markets. This paper takes a fresh look at this long-standing puzzle by combining the empirical literature on financial integration and risk sharing, which mostly uses a representative agent framework at the country level, with the empirical literature on household heterogeneity, which has a more nuanced view of household-specific risks and insurance mechanisms but remains largely agnostic about the role of financial integration and the validity of the results across countries.

Combining the benefits of both streams of literature, this paper empirically reassesses the impact of financial integration on risk sharing and household welfare in the context of the literature on heterogeneous households, while maintaining an international perspective. The paper therefore contributes to the literature by simultaneously relaxing three restrictive empirical assumptions that have featured prominently in the past: (i) the way in which idiosyncratic income shocks are smoothed; (ii) the degree to which income risk affects household welfare; and (iii) the distribution of potential welfare gains across households. More specifically, the paper examines the effect of financial integration on household welfare, measured by a household's subjective financial well-being, across countries and across households, using two international harmonized household microdata sets. The analysis covers more than 17,000 and 31,000 households from up to 22 European countries over the periods 1994–2000 and 2004–2008, respectively. As such, this paper's approach yields generalizable results on the insurance function of financial integration in a cross-country setting and thus produces findings with a high external validity.

The results of the paper are as follows. First, the paper documents a negative effect of labor income risk on the financial well-being of households. Second, it shows that financial integration can significantly mitigate this negative effect for the average household in the sample. Both results are shown to be robust across different data sets, different empirical approaches and various measures of financial integration. Third, the paper investigates the underlying insurance function of financial integration in more detail. Building on the work of Kose et al. (2006), who divide the gains from financial integration into direct and indirect gains, this paper tests their relative contribution by splitting up the overall financial integration effect according to the exposure of households to the financial system. Overall, the results indicate that the predominant insurance function of financial integration in Europe has evolved over time. During the 1990s, the largest benefits were primarily indirect in nature and occurred on the liability side of the household balance sheet, such as by providing access to credit for households with only limited initial exposure to the financial system. During the 2000s, however, the nature of the gains appeared to have shifted to the asset side and financial integration benefited, in particular, those households that had previously invested in financial markets.

1 Introduction

Financial integration in advanced countries has increased extensively over the past two decades.[1] Despite a vast empirical literature that assesses the impact of financial integration on the economy, evidence of substantial welfare gains through risk sharing or consumption smoothing remains elusive.[2] This observation is at odds with theoretical predictions that state that welfare should rise when households and firms have greater access to international financial markets. This paper takes a fresh look at this long-standing puzzle by combining the empirical literature on financial integration and risk sharing, which mostly uses a representative agent framework at the country level, with the empirical literature on household heterogeneity, which has a more nuanced view of household-specific risks and insurance mechanisms but remains largely agnostic about the role of financial integration and the validity of the results across countries.

While the early theoretical literature on financial integration and risk sharing has suggested large welfare gains through consumption risk sharing, empirical studies struggled to confirm such gains. The more recent theoretical literature therefore revised its benchmarks downward by accounting for a variety of economic frictions, especially in the financial context, that reduce the insurance possibilities of agents. However, such channels are usually not well explored in the empirical literature. Potential reasons include the abstraction from idiosyncratic shocks, the identical evaluation of welfare gains across households and the inability to observe distributional differences – all possibly owing to the implicit representative agent focus of this literature. The literature on heterogeneous households, on the other hand, is well-equipped to deal with different sources of risks and discusses associated insurance channels, but fails to account for the international dimension. Based on the self-insurance benchmark in the standard incomplete markets model with idiosyncratic shocks and a risk-free asset, the literature has examined various extensions, such as the role of borrowing constraints, housing investments, the possibility to default and differences in investor sophistication. Given this more detailed picture, findings suggest evidence for insurance levels significantly above the self-insurance benchmark. Even more so, the findings often differ across the distribution of households.

Combining the benefits of both streams of literature, this paper empirically reassesses the impact of financial integration on risk sharing and household welfare in the context of the literature on heterogeneous households, while maintaining an international perspective. The paper therefore contributes to the literature by simultaneously relaxing three restrictive empirical assumptions that have featured prominently in the past: (i) the way in which idiosyncratic income shocks are smoothed; (ii) the degree to which income risk affects household welfare; and (iii) the distribution of potential welfare gains across households. More specifically, the paper examines the effect of financial integration on household welfare, measured by a household's subjective financial well-being, across countries and across households using two international harmonized household microdata sets. The analysis covers more than 17,000 and 31,000 households from up to 22 European countries over the periods 1994-2000 and 2004-2008, respectively. As such, this paper's approach yields generalizable results on the insurance function of financial integration

[1] In this paper, "financial integration" is defined as an increase in cross-border asset and liability holdings. A discussion of the associated measures is provided in Section 3.2.2.

[2] In the remainder of the paper, the concept of "consumption smoothing" is subsumed under the notion of "risk sharing" (in a broader sense). The exact relationship between the two terms is discussed in Section 2.1.1.

in a cross-country setting and thus produces findings with a high external validity.

The results of the paper are as follows. First, the paper documents a negative effect of labor income risk on the financial well-being of households. Second, it shows that financial integration can significantly mitigate this negative effect for the average household in the sample. Both results are shown to be robust across different data sets, different empirical approaches and various measures of financial integration. Third, the paper investigates the underlying insurance function of financial integration in more detail. Building on the work of Kose et al. (2006), who divide the gains from financial integration into direct and indirect gains, this paper tests their relative contribution by splitting up the overall financial integration effect according to the exposure of households to the financial system. Altogether, the results indicate that the predominant insurance function of financial integration in Europe has evolved over time. During the 1990s, the largest benefits were primarily indirect in nature and occurred on the liability side of the household balance sheet, such as by providing access to credit for households with only limited initial exposure to the financial system. During the 2000s, however, the nature of the gains appeared to have shifted to the asset side, and financial integration benefited in particular those households that had previously invested in financial markets.

The paper is most closely related to the works by Becker and Hoffmann (2010) and Jappelli and Pistaferri (2011). Becker and Hoffmann (2010) examine the link between portfolio home bias and consumption risk sharing at the regional level in Italy. Using household survey data from Italy over the period 1987 to 2004, the authors aggregate data on income, consumption and equity fund holdings to the regional level. Their core results indicate that (i) regions with more asymmetric business cycles are more diversified because of higher participation rates and higher average holdings of equity funds; (ii) fund holdings increase with a higher exposure of non-tradable income components (e.g., labor income) to regional shocks; and (iii) inter-regional consumption risk sharing increases with fund holdings. Jappelli and Pistaferri (2011), on the other hand, study explicitly the role of financial integration on consumption risk sharing at the household level. The authors decompose the variance of consumption growth into a component that depends on the variance of permanent income and a component that depends on the variance of transitory income. In the next step, household survey data at the cohort level from Italy and the United Kingdom are used to test whether the introduction of the euro has changed the sensitivity of consumption with respect to income. The empirical findings indicate, however, that this has not been the case. While my paper is not the first to examine the role of financial integration on risk sharing at a disaggregated level, it is the first to allow for the simultaneous presence of idiosyncratic shocks, household-specific welfare evaluations and a detailed set of tests to identify potential insurance channels, while also using harmonized household-level data from a broad set of countries.

The remainder of the paper is structured as follows: Section 2 briefly reviews the literature on financial integration and consumption risk sharing, as well as the literature on heterogeneous households, and describes the contribution of this paper in relation to previous work. Section 3 introduces the estimation framework and briefly summarizes the data work. Section 4 contains the results of the empirical analysis. Section 5 discusses the findings and assesses the robustness of the main results. Finally, Section 6 concludes. The paper is also accompanied by an Online Appendix.

2 Financial Integration and Risk Sharing in the Presence of Household Heterogeneity

This section first briefly summarizes the literature on financial integration and risk sharing, as well as the literature on heterogeneous households, the two strands of literature on which this paper builds. It then continues to discuss in more detail the innovations that this paper makes in relation to previous research.

2.1 Review of the Two Underlying Strands of Literature

2.1.1 Literature on Financial Integration and Risk Sharing

The early theoretical literature on risk sharing in an international context pointed out a rationale for a positive effect of foreign investments on consumption risk sharing (e.g., Lucas, 1982; Cole and Obstfeld, 1991; Backus, Kehoe, and Kydland, 1992; Baxter and Jermann, 1997) and predicted that the welfare gains from financial integration are potentially large (e.g., Van Wincoop, 1999). Subsequently, a vast empirical literature emerged that examined the link between financial integration and consumption risk sharing using a variety of data sets and methods. The empirical literature dates back at least to Lewis (1996) and Asdrubali, Sørensen, and Yosha (1996). Asdrubali, Sørensen, and Yosha (1996) decomposed the cross-sectional variances of the gross state products in U.S. states and thus were able to quantify the amount of risk sharing through alternative channels. The authors identify three different channels, of which two (capital markets and federal government) can be categorized as ex ante risk sharing and one channel (credit markets) as ex post risk sharing. This separation corresponds to the often adapted convention in the literature to refer to the first two channels as *risk sharing* (in a narrower sense) and to the third channel as *consumption smoothing*. Building on the same approach as Asdrubali, Sørensen, and Yosha, a large number of studies subsequently analyzed risk sharing at the international level (e.g., Sørensen and Yosha, 1998; Melitz and Zumer, 1999; Kalemli-Ozcan et al., 2003). The list of studies that have used alternative methods is equally long and comprises dynamic factor models to estimate common factors of output and consumption (Kose, Prasad, and Terrones, 2003; Kose, Otrok, and Whiteman, 2008), vector autoregression models (Giannone and Reichlin, 2006), simultaneous equation models (Imbs, 2006), panel regressions (Sørensen, Wu, Yosha, and Zhu, 2007; Asdrubali and Kim, 2008), and alternative measures of risk sharing (Flood, Marion, and Matsumoto, 2012). However, the high potential welfare gains suggested by theory have not been verified, and the few studies that have found a positive impact of financial integration provided evidence of a heterogeneous pattern across countries. Faced with this obstacle, the more recent theoretical literature then shifted focus and started to lower the benchmark for empirical evaluations by introducing various frictions in its models. Areas in which such frictions are introduced include the individual's preferences, the goods markets and, more recently, financial markets in particular.[3]

[3]See the introduction of Heathcote and Perri (2008) for a detailed list of those frictions and associated references.

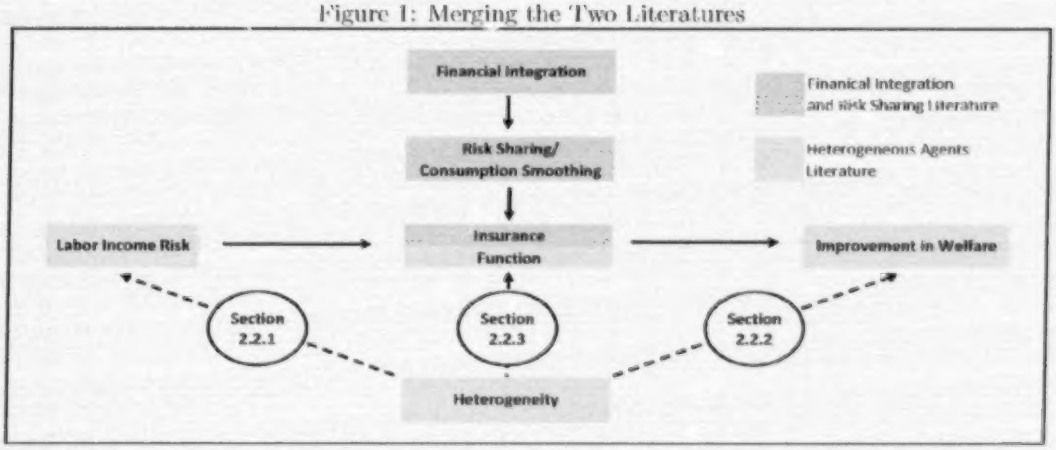
2.1.2 Literature on Heterogeneous Households

The theoretical literature on heterogeneous households is built around the standard incomplete markets model. In the model, agents face idiosyncratic shocks and can self-insure by accumulating and decumulating risk-free assets. Heathcote et al. (2009) and Guvenen (2011) survey this literature with respect to its relevance in macroeconomics. Key topics that are discussed in both papers are the sources, nature and magnitudes of idiosyncratic risks, the interaction of idiosyncratic and aggregate risks, and the presence of insurance mechanisms available to households. Variations and extensions of the incomplete markets model refer to a more detailed description of the insurance function of financial markets, such as in Bewley (1983), where agents are prevented from borrowing, or in Aiyagari (1994), where agents repay with certainty. More recent extensions also incorporate the option to default (e.g., Zhang, 1997; Athreya, 2002; Livshits et al., 2007; Chatterjee et al., 2007), the presence of housing investments (e.g., Venti and Wise, 2001; Fernandez-Villaverade and Krueger, 2011) as well as different degrees of investment sophistication (e.g., Chien et al., 2011). Although the empirical literature clearly rejects the hypothesis of perfect insurance (e.g., Cochrane, 1991; Townsend, 1994; Attanasio and Davis, 1996), it finds substantial evidence for "partial insurance" and thus insurance levels significantly above the self-insurance benchmark (e.g., Blundell et al., 2008; Primiceri and Rens, 2009, Heathcote et al., 2014). Even more so, the findings of this literature often differ across particular groups of households: e.g., along the geographical dimension (Townsend, 1994) or the degree to which households have invested in the stock market (Guvenen, 2007).

2.2 Approach and Contribution of this Paper

The brief review of the two streams of literature above has shown that the empirical literature on financial integration and risk sharing focuses mostly on the country level and thus implicitly takes on a representative-agent perspective. Hence, most papers are well equipped to incorporate the role of financial integration in the analysis and to take into account differences across countries. However, most of the literature does not consider the presence of idiosyncratic shocks in the analysis, does not account for a household-specific evaluation of gains from financial integration and is constrained in the way detailed channels can be tested. The literature on heterogeneous households is located at the other extreme. It is well equipped to evaluate the impact of household heterogeneity on the risk-sharing process along the above-mentioned dimensions. However, it neither discusses the role of financial integration in the risk-sharing process nor takes the international dimension into account, since most studies are based on household data from a single country. Therefore, combining the advantages of both literatures, this paper empirically reassesses the impact of financial integration on risk sharing and household welfare in the context of the literature on heterogeneous households, while also maintaining an international perspective. Altogether, this paper is the first to allow for the simultaneous presence of idiosyncratic shocks, household-specific welfare evaluations, and a detailed set of tests to identify potential insurance channels and distributional consequences by using harmonized household data from a broad set of countries. Figure 1 illustrates this approach in a chart. As depicted, I discuss the contributions of this paper and the relaxation of the associated standard assumptions in the remainder of this section.

Figure 1: Merging the Two Literatures



2.2.1 Relaxing Assumption 1 – Taking Idiosyncratic Shocks into Account

A frequently made assumption in the empirical literature on financial integration and risk sharing is that idiosyncratic shocks are perfectly smoothed at lower levels of aggregation. Hence, evaluating consumption dynamics at the country level, for example, does not take into account income shocks that are specific to a region, a city or even an individual household. However, as discussed in Jappelli and Pistaferri (2011), the recent microeconometric literature has shown that most of a household's income variability is determined by individual-specific shocks. On the one hand, allowing for the presence of idiosyncratic shocks in the analysis increases ceteris paribus the risks faced by the household. On the other hand, this implies that the insurance needs and thus the potential role of financial integration are greater in such a set-up.

In this paper, I relax the assumption of perfectly smoothed idiosyncratic shocks by using household-level data and conducting the empirical analysis at the household level. As pointed out in the introduction, this is not the first paper to use disaggregated data in order to examine the impact of financial integration on the economy (other examples are Becker and Hoffmann, 2010, who use regional data in Italy; Jappelli and Pistaferri, 2011, who use household data from Italy and the United Kingdom; and Fugazza, Giofré and Nicodano, 2011, who use industry-level data from the United States, Canada and Italy). However, my paper differs significantly from these papers with respect to the country coverage of the data. While the above-mentioned papers use data from a very limited set of distinct national household surveys, I use a large number of harmonized household surveys from a broad set of European countries. This innovation allows me to take into account the role of idiosyncratic shocks to the household in the empirical analysis, while obtaining results that are general enough to hold across countries and thus bear a high external validity at the same time.

Specifically, I use the European Community Household Panel (ECHP) and the European Union Statistics on Income and Living Conditions (EU-SILC), two large-scale international household data sets, to systematically assess the impact of financial integration on welfare across countries and across households. Both data sets were obtained from Eurostat and rely on a consistent methodology. After cleaning, the data sets yield balanced panels of more than 17,000 and

31,000 households from up to 22 European countries over the periods 1994-2000 and 2004-2008, respectively.[4] The periods covered by the data correspond to times when cross-border flows in European countries have increased significantly and standard financial integration measures have picked up rapidly. Both data sets are primarily targeted to determine the living conditions of European households and therefore have very rich information on income, employment and socioeconomic characteristics. However, the data sets do not provide detailed information about actual holdings of financial assets by households. Hence, in this paper, financial integration will be measured at the country level and affects the left-hand-side variable through an interaction with household-specific labor income risk. Although the use of financial integration data at the household level would be worthwhile, the current approach has the advantage that it incorporates both direct and indirect effects of financial integration on households. Especially since only a small share of households hold foreign assets directly, the opportunity to also capture indirect effects that emerge through a deeper integration of the domestic banking sector with the rest of the world, for example, is highly attractive.

2.2.2 Relaxing Assumption 2 – Taking Household-Specific Welfare Evaluations into Account

A second assumption in the literature on financial integration and risk sharing is that the evaluation of income shocks is identical across households. The standard approach to test for risk sharing is to assess the degree of co-movement of consumption with income either in levels or in first differences. In both cases, however, the underlying variables are measured in monetary terms. Although, under standard assumptions, it is easily derived from theory that lower consumption volatility implies higher utility for the household, that set-up misses at least three empirical regularities. First, depending on their degree of risk aversion, households may differ in their subjective welfare assessment of consumption volatility. Second, when being hit by a negative income shock, households may be able to reallocate consumption expenditures according to their preferences and therefore cut expenditures for the least-valued items first: especially for small income shocks, this would imply a much lower welfare reduction than suggested by theory. And third, the empirical literature in behavioral economics has shown that utility is often characterized by reference-dependence and therefore cannot be determined thoroughly by focusing on a household's consumption variance in isolation.

In order to account for such heterogeneous evaluations of income shocks, I introduce a subjective and household-specific measure of financial well-being. The measure is obtained from the answer to a question about the household's "ability to make ends meet." The corresponding question in the English questionnaire of the ECHP data set, for example, is posed as follows:[5]

[4] The names of the countries that are eventually included in the empirical analysis can be found in Table 5 in Appendix B.

[5] The question in the English questionnaire of the EU-SILC data set relies on the same answer options and is posed as follows: "A household may have different sources of income and more than one household member may contribute to it. Thinking of the household's total monthly income, the idea is with which level of difficulty the household is able to pay its usual expenses?"

> "A household may have different sources of income and more than one household member may contribute to it. Thinking of your household's total monthly income, is your household able to make ends meet?"

The answer to this question is given on a scale from 1 to 6, where 1 = "with great difficulty" and 6 = "very easily."[6] A higher value of a household's subjectively evaluated ability to make ends meet therefore implies a higher degree of financial well-being and, hence, a higher level of welfare arising from the financial situation for the household. Although the precise etymology of the idiom "make ends meet" is unknown, in the context of the two surveys, the expression refers to the comparison of a revenue-related concept (i.e., total household income) and an expenditure-related concept (i.e., consumption expenditures, relative to a latent consumption benchmark), whose relationship the household is asked to subjectively evaluate on a discrete scale.[7] While associating the revenue concept with total household income is straightforward, it is important to note that the household will incorporate the mean and the variance of its income process in the evaluation, since both will affect its state of financial well-being. Hence, a household can respond to the question with a low evaluation of its financial situation because of a permanently low level of income (i.e., a low mean) or a specifically bad realization of its income process in the current period (i.e., a high variance). Interpreting the expenditure-related concept is somewhat more involved. However, the literature suggests that it could be thought of as a latent consumption benchmark, such as present in the life-cycle model or in various approaches from behavioral economics. The life-cycle model (see Modigliani, 1966) suggests that agents want to smooth consumption over the life cycle and ideally keep it constant over time. If households indeed behave this way, there must be an inherent path of optimal lifetime consumption. Such a consumption concept would not have to be constant over the life cycle but should be relatively stable as long as the information set for a household's future consumption possibilities remains the same. In this case, the household would interpret the ability to make ends meet question as a comparison of total household income, hence, the current consumption possibilities, with its preferred lifetime consumption path and would give a better evaluation, the smaller their difference becomes. Further, the empirical literature on behavioral economics has long argued that the utility of agents is purely relative or at least depends on a reference state (e.g., Easterlin, 1974, Van Praag, 1971, Van de Stadt et al., 1985). These concepts were then formalized by Tversky and Kahneman (1991) who, based on their loss-aversion observation in prospect theory (see Kahneman and Tversky, 1979), took the reference point as given and examined the mechanism through which a reference state can affect consumption preferences. The key explanation for the existence of reference states that was put forward in prospect theory was the status quo. In theoretical models, this concept is implemented by introducing

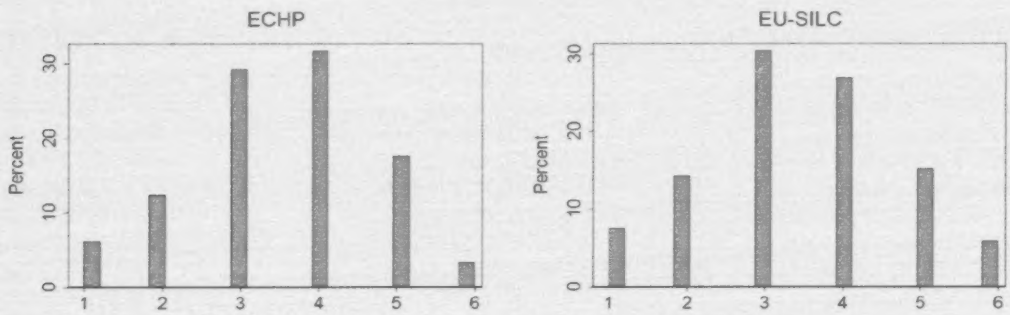
[6] The full set of answer options consist of the following: 1 = "with great difficulty", 2 = "with difficulty", 3 = "with some difficulty", 4 = "fairly easily", 5 = "easily", 6 = "very easily."

[7] Interestingly, the subjective evaluation of the income situation relative to a consumption expenditure benchmark (defined as a certain level of consumption expenditures) resembles closely the theoretical concept of an indirect utility function, which expresses utility based on income and prices (and implicitly also quantities). However, the focus of this paper is clearly on the use of a household-specific definition of financial well-being and not on the translation of the theoretical welfare concept into an empirical counterpart. Therefore, in the remainder of the paper, I will use the three terms "ability to make ends meet", "financial well-being" and "welfare" interchangeably.

habit formation, subsistence consumption or initial endowments in the utility function. Other prominent explanations for the existence of reference states describe a comparison with goals and aspirations (e.g., Sauermann and Selten, 1962, in the context of the firm) or to social preferences and norms (e.g., Gali, 1994, Akerlof and Kranton, 2000). More recent contributions include the stochastic modelling of reference points, such as in Sudgen (2003) or in Kőszegi and Rabin (2006).

To obtain a better understanding of the sample distribution of the ability to make ends meet variable, Table 6 in Appendix B displays the corresponding summary statistics for both data sets. The aggregated mean of the ability to make ends meet variable across countries, households and years amounts to 3.52 for the ECHP and to 3.46 for the EU-SILC data set. The slight reduction in the mean value in the EU-SILC can be explained by the additional inclusion of several new European Union (EU) member states, which, on average, have a lower ability to make ends meet values than corresponding old EU member states. Focusing on the disaggregated summary statistics, the highest mean in the ECHP is observed for the Netherlands (4.41) and in the EU-SILC for Denmark (4.75). In addition, the lowest mean in the ECHP is reported by Greece (2.66) and in the EU-SILC by Bulgaria (2.18). Figure 2 presents histograms of the sample distribution of the ability to make ends meet variable across countries, households and years for both data sets. The histograms show a substantial heterogeneity within both data sets and indicate, at the same time, that differences across the two data sets are relatively small. They also show that the majority of the probability mass is centered on values of 3 and 4, and only a small number of households have answered using the extreme values of 1 and 6.

Figure 2: Distribution of the "Ability to Make Ends Meet" in Both Data Sets



Note: The two panels display the distribution of answers by households to the question: "A household may have different sources of income and more than one household member may contribute to it. Thinking of your household's total monthly income, is your household able to make ends meet?" The answer options are 1 = with great difficulty, 2 = with difficulty, 3 = with some difficulty, 4 = fairly easily, 5 = easily, and 6 = very easily.

2.2.3 Relaxing Assumption 3 – Assessing Distributional Questions and Testing Specific Insurance Channels

The third assumption implicitly made by studies using aggregate data in the financial integration and risk-sharing literature is that all households within a unit of aggregation are identical.

Hence, it is not possible to make meaningful inferences about the distributional consequences of a policy. However, the recent theoretical literature has pointed out the importance of investigating distributional questions in modern macroeconomics (e.g., Caselli and Ventura, 2000; see also Heathcote et al., 2009, and Guvenen, 2011, for comprehensive surveys of the literature on household heterogeneity). Such distributional questions are of even more interest in the household sector, since it is characterized by a high degree of heterogeneity. Compared with firms that are at least to some extent profit maximizing, households differ much more in their individual preferences, their demographic characteristics and their level of initial endowments. In addition, the access to insurance products and the extent of optimizing behavior that households exhibit may play an important role. The same policy change can therefore have substantially different consequences for different groups of households. As the brief review of the literature on heterogeneous households above has indicated, this is indeed the case (e.g., Townsend, 1994; Guvenen, 2007). Furthermore, when using aggregate data and operating under the assumption that households are identical, it is very difficult to identify specific channels through which a policy is working. Using disaggregated data, however, it becomes possible to investigate such channels in a meaningful way. By splitting the overall sample of households into subsamples according to specific household characteristics, we can test if households with these characteristics are affected differently by the policy than households that do not exhibit such characteristics. If this is indeed the case, we can be more confident that the identified characteristics are part of the policy's transmission mechanism.

Testing corresponding channels in the context of the financial integration and risk sharing literature implies replacing the abstract notion of the policy with the increase in financial integration over time. Potential channels that have been discussed in the literature so far are the following. Kose et al. (2006) survey the financial integration literature and introduce the distinction between *direct* and *indirect* benefits of financial integration in the context of the two outcome variables "growth" and "volatility." The authors cite capital accumulation and portfolio diversification as the direct benefits, and financial market development, institutional development, better governance and more macroeconomic discipline as the indirect benefits. Focusing primarily on the effects that are relevant from the perspective of the risk-sharing literature, and thus relating to the volatility part of the statement, direct and indirect benefits of financial integration can be distinguished as follows.

Direct benefits are gains from financial integration experienced by households that are currently exposed to the financial system.[8] A key example is a higher degree of portfolio diversification from the newly gained ability to buy foreign equity investments and thus insure against country-specific shocks in the home country. In addition, the integration of financial markets across countries broadens the pool of households that are subject to different idiosyncratic shocks and thus increases the degree of diversification in at least the following two cases: (i) if the number of households in the old markets was too small to fully exploit the benefits stated by the law of large numbers; or (ii) if there is an interaction of idiosyncratic and aggregate shocks and thus idiosyncratic shocks to different households within each country are still correlated to some extent.

[8] In the remainder of this paper, I use the notion "financial system" as the umbrella term for both the banking system and financial markets as a whole.

Indirect benefits are gains that are experienced by all households in a country but primarily by those households that are currently not well exposed to the financial system. A key example here is a faster development of financial markets and the banking system that materializes because of better access to insurance products for less financially exposed households. Gaining the possibility to obtain a loan in the event of a temporarily negative income shock, for example, reduces the requirement of households to hold large amounts of inefficient precautionary savings. Having access to equity investments as well allows households to generate state-contingent returns and thus insure additionally against fluctuations in labor income through the asset side. These channels are supported by the above-mentioned set of additional improvements that could be subsumed under the heading "institutional development and international policy coordination." In the European context, one could think of these improvements as covering all financial-market-related benefits from the European integration process, such as the gains from the creation of the EU Common Market, the Euro System and other recent attempts at European-wide policy coordination (e.g., deposit insurance or banking regulation, supervision and resolution).

From a distributional point of view and the perspective of a policy-maker, the differentiation between direct and indirect benefits of financial integration can be very important. It allows us to assess whether certain groups of the population are negatively affected and thus additional laws or a redistribution of gains within the population are required. In this paper, the final part of the empirical analysis in Section 4.3 explicitly focuses on the relative contribution of direct and indirect benefits. As a preliminary step, it is important to differentiate between households that are currently exposed to the financial system and households that are not. In the ECHP and in the EU-SILC data sets, a large number of household characteristics are available that can be used to examine the underlying channels through which financial integration affects the financial well-being of households more thoroughly. Taking advantage of the highly disaggregated nature of the two household data sets, I later split the sample of households along the following five dimensions that proxy for the exposure of a household to the financial system: (i) being a capital income receiver, (ii) working in the banking sector, (iii) owning a house, (iv) being among the top 50% of the income distribution and (v) being a mortgage debt holder (for a detailed reasoning regarding the inclusion of each measure, see Appendix A). Besides the distributional consequences of financial integration, it will also be interesting to see whether the majority of gains from financial integration emerge through the asset or the liability side of the household balance sheet, and whether such gains materialize through the use of financial markets or the banking system. Some of these questions are already addressed in Section 4.2, when the use of a broad set of financial integration measures provides insight into where most of the gains are to be expected.

Overall, this section has outlined the paper's main contribution to the literature. By allowing heterogeneity to enter in the way risks affect the household, the way the evaluation of shocks is conducted and the way potential insurance channels are investigated, this paper simultaneously relaxes three restrictive assumptions that are inherently present in many studies in the financial integration and risk-sharing literature. Therefore, this paper sheds more light on the insurance mechanisms of financial integration in comparison with many previous papers in the literature.

The next section discusses how these considerations translate into the empirical specification and provides more details about the two household data sets.

3 Methodology

This section describes the motivation for the baseline specification and outlines its extensions. It provides a brief description of the data work and a discussion of the variables used in the empirical analysis. A more detailed description of the data preparation is given in the Online Appendix that accompanies this paper.

3.1 Derivation of the Empirical Specification

Previous studies in the literature have examined the effect of financial integration on consumption risk sharing primarily by relating the variation of consumption growth to the variation of income growth (see Asdrubali and Kim, 2008, for example). Given the specific nature of the ability to make ends meet measure, the standard approach cannot be applied here. Instead the following route is taken. The empirical analysis in this paper centres around the question of how households deal with the risk inherent in their labor income process. Throughout the paper, labor income risk for each household is measured by taking the logarithm of the standard deviation of its labor income over all available years of data. The result is a household-specific measure of labor income risk that is constant over time. Although, in theory, the risk concept may refer to labor income risk over the life cycle, the presence of only seven years of data in the ECHP data set and only four years in the EU-SILC shifts the focus more to the medium term.

Over the life cycle, households experience changes in their labor income mainly for two distinct reasons. The first source of changes is largely expected by the household and relates to income increases resulting from better education or the accumulation of experience over the life cycle, for example. Although the exact timing of such changes may be unknown, their appearance could be anticipated. Households therefore may incorporate such expected income increases in their previously described consumption expenditure benchmark. The second source of income changes – the one this paper primarily focuses on – is largely unexpected and thus cannot be anticipated by the household. To conceptually motivate an empirical specification that accounts for both changes, consider the following equation:

$$abtmem = \gamma_1 \ln y^T + \gamma_2 \left[\ln y^T - \ln m(y^L)\right] + \gamma_3 \ln \left[\frac{sd(y^L)}{m(y^L)}\right], \tag{1}$$

where y^T denotes total household income, y^L represents the labor income of the household, $m(y^L)$ is its time mean, and $sd(y^L)$ is its corresponding standard deviation. The ability to make ends meet, denoted by *abtmem*, can then be explained by three terms. The first term comprises the logarithm of total household income, whose effect on the ability to make ends meet is measured by coefficient γ_1. The second term captures deviations from the expected income path by measuring the difference of the logarithm of total household income today and the logarithm of the labor income mean, a potential proxy variable for the expected labor income path in the medium term. The impact of this deviation is measured by coefficient γ_2. Finally, the third

term documents the impact of unexpected income changes through coefficient γ_3. The associated variable is represented by the logarithm of a widely used measure of risk: the coefficient of variation. The coefficient of variation is defined as the ratio of the labor income standard deviation to the labor income mean.

3.1.1 The Baseline Specification

The next step consists of translating Equation (1) into an equation that can be estimated. After separating the labor income mean from the labor income standard deviation to be able to distinguish their opposing effects later on, rearranging terms and adding control variables, the following equation is obtained:

$$abtmem_{i,t} = a_{c/r/i} + a_t + \beta_1 \ln y^T_{i,t} + \beta_2 \ln m(y^L_t)_i + \beta_3 \ln sd(y^L_t)_i + \beta_4 X_{i,t} + \varepsilon_{i,t} \qquad (2)$$

The purpose of this baseline specification is to quantify the impact of labor income risk on the financial well-being of households. Corresponding to Equation (1), the left-hand side of Equation (2) is represented by the ability make ends meet variable, $abtmem_{i,t}$, which varies over households i and over time t. As argued above, the ability to make ends meet variable is assumed to capture the welfare effects arising from the financial situation of a household. Other variables, which were introduced above, are the logarithms of total household income, $\ln y_{i,t}$, which varies in the same way as the ability to make ends meet; the household-specific time-mean of labor income, $\ln m(y^L_t)_i$; and the household-specific standard deviation of labor income, represented by $\ln sd(y^L_t)_i$.[9] In Equation (1), *risk* was determined by the coefficient of variation of labor income in logs. Using the coefficient of variation in a regression framework, however, would have the major disadvantage that the opposing effects of mean and standard deviation cannot be distinguished anymore. Hence, both variables enter the empirical specification separately. For the remainder of the paper, the logarithm of the standard deviation of labor income alone is referred to as *labor income risk*. Its impact on the financial well-being of households is measured by coefficient β_3.

Eventually, control variables and fixed effects are added to the specification. Coefficient vector β_4 captures the impact of two sets of controls contained in variable vector $X_{i,t}$. The first set of control variables is household-specific in nature and the second one refers to the country level. All variables contained in these sets are described in greater detail in the next subsection. Further, depending on the specification, fixed effects for time, a_t, and/or a geographical aggregation, such as the country, a_c, the region, a_r, or the household, a_i, are added to capture all period-specific and time-invariant characteristics that cannot be controlled for otherwise. It should finally be noted that whenever household fixed effects are included in the specification, the mean and the standard deviation of labor income will be absorbed and the corresponding coefficients β_2 and β_3 can no longer be identified. All specifications are estimated using a linear regression model with an ordinary least squares estimator and standard errors clustered at the household level.

[9] Note that y^L_t is the short-hand form of $y^L_{i,t}$. The short-hand form is used to illustrate more explicitly that both the mean and the standard deviation are computed over time.

3.1.2 The Impact of Financial Integration on the Average Household

Following the baseline specification, the next equation assesses the broad impact of financial integration on the financial well-being of the average household in the sample:

$$abtmcm_{i,t} = a_i + a_t + \beta_1 \ln y^T_{i,t} + \beta_4 X_{i,t} + \beta_5 FI_{c,t} + \beta_6 \ln sd(y^L_t)_i \times FI_{c,t} + \varepsilon_{i,t} \quad (3)$$

To determine the impact of financial integration, an interaction term of household-specific labor income risk and financial integration at the country level is added. The corresponding coefficient β_6 captures the differential effect of the standard deviation of labor income on the ability to make ends meet, depending on the degree of financial integration in the country of residence. When financial integration is beneficial, this effect should be positive in order to counterbalance the negative welfare impact of labor income risk. To obtain unbiased coefficient estimates, the level term of financial integration is also added and its impact is measured by coefficient β_5. The total marginal effect of labor income risk on the ability to make ends meet can now be calculated by differentiating Equation (3) with respect to labor income risk. The resulting marginal effect is then given by the following:

$$\frac{\partial abtmcm_{i,t}}{\partial \ln sd(y^L_t)_i} = (\beta_3) + \beta_6 FI_{c,t} \quad (4)$$

More financial integration should help to better insure households against fluctuations in labor income over time. If there is perfect consumption risk sharing under financial integration, one would expect even the marginal effect of labor income risk to become insignificant. While such a test would be worthwhile to carry out, the use of household fixed effects, and the resulting absorption of the time-constant coefficient β_3, prevents this evaluation procedure. Therefore, instead of computing the *total marginal effect*, as depicted by the entire Equation 4, the evaluation of the results will be conducted using only the second term of the equation. The second term displays exclusively the improvement in financial well-being through financial integration, while the negative impact of labor income risk has to be taken from the baseline specification. In the empirical analysis, this positive counter effect of financial integration will be referred to as the *partial marginal effect*.

3.1.3 The Impact of Financial Integration Across the Distribution of Households

Since the use of household data has the advantage of examining the strength of these effects across different types of households, the next specification breaks down the effect of financial integration on financial well-being according to various household characteristics. The set of household-specific characteristics that should capture differences in the financial system exposure of households has already been discussed in Section 2.2.3. All household characteristics enter the specification as dummy variables, taking on the value of 1 when the household is more exposed to the financial system and 0 in all other cases. To take such heterogeneity of the marginal effect of labor income risk across households into account, Equation (3) is augmented by an interaction

with the household-specific dummy variable. The resulting set-up is shown in Equation (5):

$$\begin{aligned} abtmem_{i,t} \quad = \quad & a_i + a_t + \beta_1 \ln y^T_{i,t} + \beta_4 X_{i,t} + \beta_5 FI_{c,t} + \beta_6 sd(y^L_t)_i \times FI_{c,t} \\ & + \beta_7 \ln HH_{i,t} + \beta_8 \ln sd(y^L_t)_i \times HH_{i,t} + \beta_9 FI_{c,t} \times HH_{i,t} \\ & + \beta_{10} \ln sd(y^L_t)_i \times FI_{c,t} \times HH_{i,t} + \varepsilon_{i,t} \end{aligned} \tag{5}$$

The core term of this specification is the triple interaction in the third row, measured by β_{10}, which captures the differential effect of the interaction term of labor income risk, financial integration and the newly introduced exposure of households to the financial system, measured by $HH_{i,t}$. To account for all lower-level interactions, additional terms have to be added. Coefficients β_5 and β_7 capture the effects arising from the level terms of the two time-varying variables. In addition, the triple interaction requires the inclusion of three double interactions. The first double interaction resembles the interaction term shown in Equation (3) and its effect is captured by coefficient β_6. However, in contrast to the previous case, β_6 now measures only the interaction effect of labor income risk and financial integration when the dummy for household exposure to financial markets is equal to zero. Similarly, coefficient β_8 measures the interaction effect of labor income risk and the dummy for household exposure to the financial system for financial integration being equal to zero. Eventually, β_9 measures the interaction effect of financial integration and the dummy for household exposure to the financial system when labor income risk is equal to zero. The last two terms in particular show intuitively the importance of calculating the marginal effect of labor income risk, since both labor income risk and financial integration will not be zero in the present sample and thus the isolated interpretation of their coefficients will not be meaningful. The corresponding total marginal effect of labor income risk is obtained again by differentiating Equation (5) with respect to $sd(y^L_t)_i$:

$$\frac{\partial abtmem_{i,t}}{\partial \ln sd(y^L_t)_i} = (\beta_3) + \beta_7 FI_{c,t} + \beta_8 HH_{i,t} + \beta_{10} FI_{c,t} HH_{i,t} \tag{6}$$

Hence, the total marginal effect of labor income risk on the ability to make ends meet depends in two ways on the country-level effect of financial integration and in two ways on the effect of household-specific characteristics: through their respective double interaction terms as well as through the common triple interaction term. However, as in the last subsection, the results of this exercise will be evaluated based on the partial marginal effect that excludes coefficient β_3.

3.2 Data Set Preparation and Variable Construction

3.2.1 Preparation of the Household Data Sets

The empirical analysis in the paper is based on the *European Community Household Panel* (ECHP) and the *European Union Statistics on Income and Living Conditions* (EU-SILC), two international household microdata sets that were provided by Eurostat through research contracts. By requiring all participating countries to follow an extensive set of common guidelines, concepts and classifications, both data sets are designed to reach high levels of comparability across countries and time. Although both data sets essentially contain the same variable labels,

some remaining differences in the panel structure, the time period and the definitions of the income variables make it necessary to treat both of them separately in the empirical analysis. The two data sets are characterized as follows. The ECHP is a standard panel data set that follows households from up to 15 countries over the period 1994-2001. The EU-SILC is a rotating panel that covers households from up to 28 countries over the period 2004-2009.[10] While the ECHP data set provides all types of income in net terms, the corresponding net income measures in the EU-SILC data set are only available for very few countries. Hence, in the empirical analysis, income variables in the EHCP data set will be measured in net terms and income variables in the EU-SILC data set will be measured in gross terms.

The remainder of this section gives a brief overview of the steps that have been carried out in order to prepare both data sets for the empirical analysis. All details about the underlying procedures are described in the Online Appendix. After the data sets are merged from their underlying source files, a few data modifications have to be conducted in order to clean the data (for details, see Section 2.1 of the Online Appendix). In the next step, the income variables in both data sets are made comparable across time, countries and households (for details, see Section 2.2 of the Online Appendix). This requires the stepwise adjustment of all income variables to inflation dynamics, purchasing-power-parity (PPP) differences in the cross-section of countries and different household sizes. After all adjustments have been carried out, income variables are expressed in *constant purchasing-power-parity units per adult equivalent*. Further, it should be noted that in both data sets, the questions on all income variables relate to the *year prior to the survey*. Hence, in both data sets, the income variables have to be forwarded by one year. Finally, the resulting income variables are aggregated to the country level and their ranking and time variation are compared with those of closely related GDP per capita values from the World Economic Outlook (WEO) database. Although it turns out that there are slight differences between the two data sources, the differences are generally small and systematic across countries and time.

For each household, a household head is then determined according to the following conditions (for details, see Section 2.3 of the Online Appendix). In order to obtain two balanced samples, the household head is required to have non-missing values for the main variables in the empirical analysis and remain in the household over the entire sample period. Among all household members that fulfill these criteria, who are at minimum 17 years of age and remain below a data-set-specific maximum age[11] throughout the sample period, the person with the highest average income is selected. If this set is not unique, the person with the highest age is then chosen and, if the set is still not unique, the male person is selected. In addition, the empirical analysis considers only households with a total annual income of more than 100 constant PPP units per adult equivalent and a labor income greater than zero. While the first restriction insures that households with very small or negative income are excluded from the analysis, the second restriction requires a brief discussion. The exclusion of households with zero

[10] I use the 2007, 2008 and 2009 waves of the longitudinal version of the EU-SILC data set. Households remain in the panel for up to four years. In addition, not all countries are included in the sample. See Table 5 in Appendix B for details.

[11] Due to different top codings of the age variables, the maximum age differs somewhat in the two data sets. The maximum age is 82 years in the ECHP and 72 years in the EU-SILC data set.

labor income ensures that households living exclusively from other sources of income are not part of the empirical analysis. This applies mainly to households that live on pension payments and unemployment benefits. On the one hand, this criterion leads to an exclusion of a substantial number of households that experience severe income shocks – especially in the context of unemployment – and thus reduces the size of the labor income risk that each household faces.[12] On the other hand, it ensures that the empirical results are not contaminated by differences and changes in national unemployment insurance and pension systems, two important drivers of the financial well-being of households that are very difficult to account for in a multi-country analysis. Finally, because of their functions as money centers in Europe and their resulting artificially inflated financial integration measures, Luxembourg and Ireland are excluded from the empirical analysis.[13]

After all the above steps have been completed, for most specifications, this leaves 17,625 unique households from 11 countries in the ECHP data set and 31,162 from 22 countries in the EU-SILC for the analysis.

3.2.2 Construction of Variables

This section describes the variables used in the empirical analysis. While the country-level variables are discussed more extensively, details on the construction of the household-level variables appear in Section 3 of the Online Appendix. The summary statistics of all right-hand-side variables are depicted in Tables 6 and 7 in Appendix B of this paper.

Ability to Make Ends Meet: For a more detailed description of this variable, see Section 2.2.2.

Total Income: Total income, also referred to as *total household income*, is the sum of all income components of a household. The logarithm values of the variable have been winsorized at the 0.5% level on both sides.

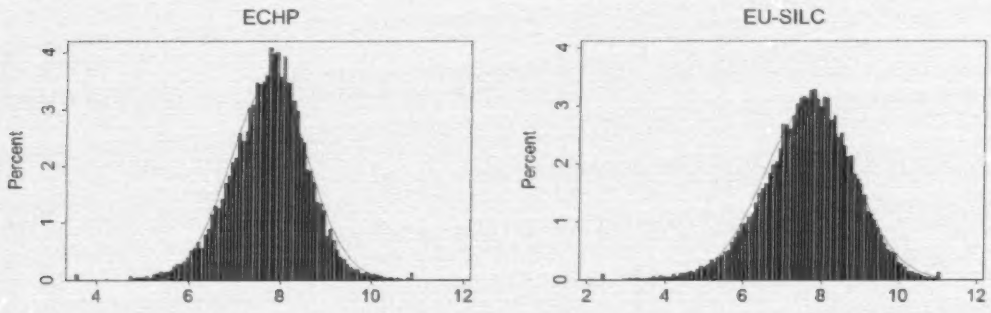
Mean of Labor Income: The mean of labor income corresponds to the time mean of the labor income variable for each household. The logarithm values of the mean have been winsorized at the 0.5% level on both sides.

Standard Deviation of Labor Income ("Labor Income Risk"): The measure of labor income risk corresponds to the standard deviation of a household's labor income over time. The logarithm values of the standard deviation have been winsorized at the 0.1% level on both sides. The cross-sectional distribution of these values is presented in Figure 3, which shows the distribution of the final variable in the two data sets is approximately normal.

[12] This in turn makes the estimate of the effect that financial integration has in mitigating such income shocks a very conservative one.

[13] For details, see the description of the financial integration measures in the next section.

Figure 3: Distribution of "Labor Income Risk" (in Logs) in Both Data Sets



Note: The two histograms display the distribution of the logarithm of the standard deviation of labor income in the two data sets. The standard deviation is computed for each household and refers to the variation of its income over time.

Household Controls: The following household controls are included in all regressions: (i) the age of the household head, (ii) the age variable squared, (iii) a dummy variable for being married, (iv) a dummy variable indicating a bad health status, (v) and, in addition, for the ECHP data set, a dummy for being self-employed is used. This variable is not available in the EU-SILC data set. However, since the share of self-employed workers in the ECHP data set is relatively large (about 20%) and being self-employed may be associated with a lower risk aversion toward income shocks, the dummy variable for self-employment is included in the ECHP data set. Further, all specifications that use cross-sectional variation include (vi) a dummy variable for the household head being male and (vii) a dummy for higher education.

Country Controls: To control for other long-term trends and thus alternative time-varying explanations of financial integration, four country-level controls are added to the specification.[14] Trade integration has been cited in both the theoretical (e.g., Kraay and Ventura, 2002) and the empirical (e.g., Imbs, 2006) literature as a potential factor that improves a country's ability to share risks. To control for trade integration, the sum of exports and imports in % of GDP are added to the specification. Another factor that may affect the degree of risk sharing is the level of domestic financial development. The literature frequently uses the ratio of private credit to GDP as a corresponding measure. However, since facilitating the provision of credit is one of the channels through which financial integration may affect households, it should not be kept constant while assessing the effect of financial integration on a household's ability to make ends meet. Instead, I use a measure of stock market capitalization in % of GDP.[15] I then control for real and monetary developments that may change over the business cycle. To capture real developments, the unemployment rate is included; to capture monetary developments, the

[14]The sources of the four variables are as follows: The trade variable is taken from the Penn World Table, Version 7.0. The measure for stock market capitalization is taken from Beck, Demirgüç-Kunt, and Levine (2000). The unemployment rate and the inflation rate are both taken from the WEO Database, September 2011.

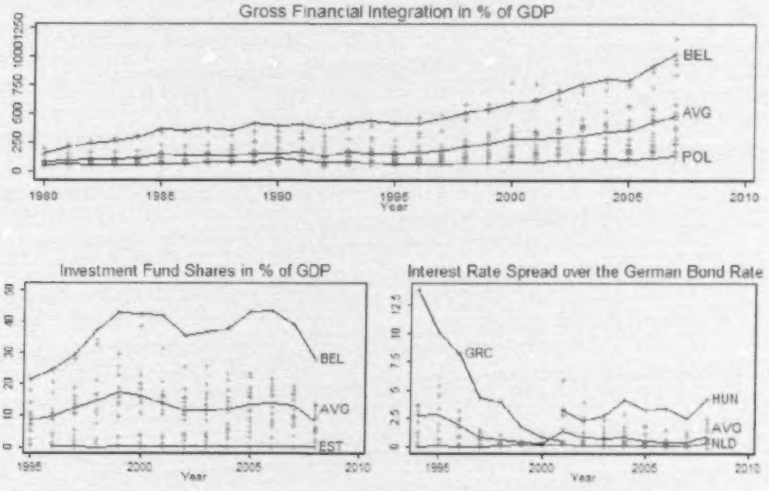
[15]Although, after including this variable, the effects of financial integration through stock market development can no longer be identified, stock market capitalization seems to be preferable to the broader credit measure.

inflation rate is added. Alternatively, the interest rate could also have been added, which would, however, have kept another potential channel of financial integration constant.

Measures of Financial Integration: Given the lack of information on the foreign financial exposure of households in the two household data sets, I use three different groups of financial integration measures at the country level. All measures are taken from the existing literature and measure financial integration on a quantitative *de facto* basis.[16]

First, a broad set of quantity-based *de facto* measures from Lane and Milesi-Ferretti (2007) is used. The core measure is *Gross Financial Integration*, which corresponds to the sum of total foreign assets and total foreign liabilities in % of GDP. The top panel of Figure 4 shows this measure for the sample countries since 1980. It becomes evident that the *Gross Financial Integration* measure for the average sample country trends up over time. The dynamics of this upward trend are, however, highly heterogeneous across countries – indicating the importance of including a cross-country dimension in the empirical analysis.

Figure 4: Development of Different Financial Integration Measures over Time



Note: The three panels show three different measures of financial integration as well as their distribution across the sample countries and over time. To highlight cross-country dynamics, the countries with the highest and the lowest average values are depicted with solid lines. All other country-time observations are represented by "+" signs. Details on the sources of the three measures can be found in the text.

To highlight these cross-country dynamics, the country with the highest average value, Belgium, and the country with the lowest average value, Poland, are depicted with solid lines. All other country-time observations are represented by "+" signs. In the empirical analysis, the gross financial integration measure is further disaggregated by capital class (i.e., "FDI", "portfolio equity", "portfolio debt", and "bank and other") and balance sheet side (i.e., "assets" and

[16]There are no *de jure* measures available that provide a sufficient differentiation between European countries.

"liabilities").[17] When the composition of assets and liabilities is examined (not shown here), it turns out that more-integrated countries rely on a more-balanced mix of capital classes, including significant amounts of portfolio equity assets. The less-integrated countries, however, in particular Greece, rely largely on portfolio debt liabilities.

Second, since this paper is primarily concerned with the financial well-being of households, I follow Becker and Hoffmann (2010) and use a measure of investment fund holdings owned by the household sector. Although no information on the investment pattern of such funds is provided, the authors argue that investment funds are the most diversified asset class and thus such a measure can capture the expected effect from financial integration relatively well. Since the variable used in Becker and Hoffmann (2010) refers to Italian regions only, I instead use the variable *Investment Fund Shares of Households in % of GDP*, provided by the OECD.[18] In the remainder of this paper, the measure will be referred to as *Investment Fund Shares* of households. The bottom-left panel of Figure 4 displays the development of this measure over time. In the first part of the sample, holdings of investment fund shares by households increase substantially for the average country. During the 2000s, holdings go down slightly for a while and then plunge during the recent financial crisis. On average, Belgium is the most-integrated country for this measure as well. The least-integrated country is Estonia.

Third, a price-based measure of financial integration is used. Since advanced countries account for a potentially large share of world output, theory suggests that their optimal foreign capital exposure to the rest of the world may be lower than for developing countries. Hence, quantity-based measures may underestimate the true degree of financial integration, especially in large advanced countries. Although there is no European country that captures a substantial share of world output and thus the problem seems to be not severe in the present case, I use a price-based measure of financial integration for robustness. I follow Jappelli and Pistaferri (2011), who use 10-year bond yield spreads of Italian over German government bonds.[19] To expand the measure to the European data set, I compute for each of the sample countries the spread between the 10-year national government bond yield and the German 10-year government bond yield, taken from Eurostat. Henceforth, this measure is referred to as *Interest Rate Spread*. The measure is displayed in the bottom-right panel of Figure 4. It confirms the dynamics of the previous measures, indicating a strong increase of financial integration in the first sample.

Measures of Financial System Exposure: The measures used to capture the heterogeneity among households with respect to their exposure to the financial system have already been described extensively in Section 2.2.3 and in Appendix A. The set of financial exposure variables in the main part of the analysis comprises (i) being a capital income receiver, (ii) working in the

[17] An exception is portfolio equity, where only the asset-side measure is used in the analysis, since the liability-side measure is theoretically less appealing and seems to be heavily affected by outliers.

[18] For the time period of the EU-SILC data set, the OECD provides data also on investment fund diversification, which in turn allows computing of an additional measure of financial integration. The resulting measure is a composite index of foreign equity asset holdings by households via investment funds and is obtained by weighting the above-mentioned investment fund holdings variable by the foreign exposure of investment funds.

[19] It should be taken into account that a number of other factors may influence government bond yields as well and, therefore, this measure may not thoroughly reflect financial integration dynamics. The creation of the European Monetary Union in particular has caused government bond yields of periphery countries to fall substantially.

banking sector, (iii) owning a house, (iv) being among the top 50% of the income distribution and (v) being a mortgage debt holder. All variables enter as dummy variables, taking on the value of 1 when the household is exposed to the financial system in a certain category and zero otherwise.

4 Results

The following section presents the results of the empirical analysis of the two data sets in parallel. First, I document a negative impact of labor income risk on household welfare and show that the impact is not only statistically but also economically significant. I then examine the role of financial integration in insuring households against labor income risk from the perspective of the average household in the sample. Finally, I split up the impact of financial integration across the distribution of households by differentiating households according to their exposure to the financial system. This allows testing of how different types of households have profited from the increase in financial integration.

4.1 The Baseline Specification

First, the baseline specification is estimated to document the negative impact of labor income risk on a household's ability to make ends meet and thus on its level of financial well-being. The key results of this exercise for both data sets are summarized in Table 1.[20]

Based on Equation (2), for each of the two data sets, a series of six different baseline specifications is estimated. In all specifications, the *Ability to Make Ends Meet* is regressed on *Total Income*, the *Mean of Labor Income* and, the key variable of interest, the *Standard Deviation of Labor Income*, as well as on household and country controls as explained in the previous section. However, the specifications differ with respect to their selection of fixed effects. While Specification (1) does not contain any fixed effects, Specifications (2) to (6) include different sets of fixed effects. For Specification (2), these are time fixed effects with the intention to capture all unobserved heterogeneity that is related to a specific year. Specification (3) combines time and country fixed effects and thus captures unobserved heterogeneity at the country level and along the time dimension. Specification (4) replaces the country aggregate with regional fixed effects, based on a combination of Nomenclature of Territorial Units for Statistics (NUTS) level 1 and 2 regions in Europe. Specification (5) continues to rely on time fixed effects but, in addition, assumes household-specific random effects. However, since the assumption of randomness may not be justified, Specification (6) models the household-specific effects as deterministic. As discussed at the end of Section 3.1.1, this corresponds to the use of a within estimator, which can identify only the coefficients of variables that vary over time. Hence, the coefficients of the time-constant variables, such as the mean of labor income and the standard deviation of labor income, cannot be identified in such a framework.[21]

[20] An exhaustive presentation of the results, including the coefficients of all control variables for each of the two data sets can be found in Appendix B (see Table 8 for the ECHP and Table 9 for the EU-SILC).

[21] Also the gender dummy (*Dummy for Being Male*) and the education dummy (*Dummy for Higher Education*) are excluded from this specification as both are time-invariant.

Table 1: Baseline Specification

Top Panel: ECHP

Dependent Variable: "Ability to Make Ends Meet"	(1)	(2)	(3)	(4)	(5)	(6)
Total Income	0.437***	0.449***	0.441***	0.432***	0.266***	0.194***
	(0.00)	*(0.00)*	*(0.00)*	*(0.00)*	*(0.00)*	*(0.00)*
Mean of Labor Income	0.498***	0.471***	0.438***	0.425***	0.636***	
	(0.00)	*(0.00)*	*(0.00)*	*(0.00)*	*(0.00)*	
Std. of Labor Income	-0.036***	-0.036***	-0.037***	-0.034***	-0.028***	
	(0.00)	*(0.00)*	*(0.00)*	*(0.00)*	*(0.00)*	
Time Fixed Effects	No	Yes	Yes	Yes	Yes	Yes
Country Fixed Effects	No	No	Yes	No	No	No
Regional Fixed Effects	No	No	No	Yes	No	No
Random Effects	No	No	No	No	Yes	No
Household Fixed Effects	No	No	No	No	No	Yes
Observations	119,531	119,531	119,531	108,695	119,531	121,659
Households	17,625	17,625	17,625	16,077	17,625	17,929
Countries	11	11	11	10	11	11
R-squared	0.32	0.33	0.35	0.33	0.32	0.02

Bottom Panel: EU-SILC

Dependent Variable: "Ability to Make Ends Meet"	(1)	(2)	(3)	(4)	(5)	(6)
Total Income	0.422***	0.424***	0.503***	0.493***	0.228***	0.067***
	(0.00)	*(0.00)*	*(0.00)*	*(0.00)*	*(0.00)*	*(0.00)*
Mean of Labor Income	0.341***	0.328***	0.320***	0.322***	0.462***	
	(0.00)	*(0.00)*	*(0.00)*	*(0.00)*	*(0.00)*	
Std. of Labor Income	-0.011**	-0.014***	-0.032***	-0.029***	-0.019***	
	(0.04)	*(0.01)*	*(0.00)*	*(0.00)*	*(0.00)*	
Time Fixed Effects	No	Yes	Yes	Yes	Yes	Yes
Country Fixed Effects	No	No	Yes	No	No	No
Regional Fixed Effects	No	No	No	Yes	No	No
Random Effects	No	No	No	No	Yes	No
Household Fixed Effects	No	No	No	No	No	Yes
Observations	93,486	93,486	93,486	81,825	93,486	94,515
Households	31,162	31,162	31,162	27,275	31,162	31,505
Countries	22	22	22	19	22	22
R-squared	0.33	0.34	0.40	0.39	0.33	0.01

Most of the six specifications in the ECHP are based on 119,531 observations, from 17,625 households in 11 countries and in the EU-SILC on 93,486 observations from 31,162 households in 22 countries. Differences appear in Specification (4), where information on the region in which

the household lives is not available for all countries (hence, slightly fewer observations), and in Specification (6), where time-invariant variables are excluded (hence, slightly more observations). The corresponding R^2 measures are very similar across the two data sets and vary in identical ways across specifications. The R^2 measures range between 0.32 and 0.40 when between-variation is considered and between 0.01 and 0.02 when within-variation is considered.

Turning to the interpretation of the coefficients, the two data sets deliver remarkably similar results.[22] Starting with the assessment of the key variables, as expected, coefficients β_1 and β_2 are positive in all cases. Hence, both total income and the time-constant mean of labor income have the anticipated positive signs indicating that not only higher income in each period, but also a higher labor income over time, lead to a higher ability to make ends meet.[23] The core interest, however, lies in the significance and the sign of coefficient β_3. This coefficient represents the effect of the standard deviation of labor income on the ability to make ends meet. According to economic theory, one would expect that a household suffers from a welfare reduction when the risk in its income process, represented by the standard deviation of labor income, increases. And indeed, the results show that coefficient β_3 is highly significant (i.e., at the 1% level) and negative in all specifications in which it can be identified. In the ECHP data set, β_3 turns out to be very stable across specifications, ranging from -0.028 to -0.037. In the EU-SILC data set, β_3 is somewhat less stable, ranging from -0.011 to -0.029. However, in all cases, coefficient β_3 is negative and highly significant, and the more disaggregated the set of fixed effects becomes, the closer the magnitude gets to the one found in the ECHP data set. This implies that households experience a reduction in welfare when their labor income is, ceteris paribus, more volatile.

The full set of results is shown in Tables 8 and 9. It turns out that nearly all household and country controls are highly significant and carry the expected sign. At the household level, being male, married, more educated or self-employed increases the ability to make ends meet, while having bad health reduces ability to make ends meet. The coefficient for the age impact is dependent on the level of age, leading to increases in the ability to make ends meet for high age values. Also the country controls have the expected signs. A higher stock market capitalization and a higher degree of trade integration lead to an improvement in the ability to make ends meet, and a higher inflation or unemployment rate lead to a reduction.

Returning to the set of key variables that exhibited a high statistical significance, in the next step, the economic significance of the mean and the standard deviation of labor income are examined. Recall that a coefficient β in a level-log specification can be expressed using the following relation:

$$\beta = \frac{\Delta y}{\Delta x} x \tag{7}$$

[22]The stars on the coefficients indicate the level of significance (*** = 1%, ** = 5% and * = 10%) and the values in brackets under each coefficient indicate the corresponding p-values of a t-test for insignificance.

[23]It should be kept in mind that the logarithms of total income, the mean of labor income and the standard deviation of labor income have been taken. For simplicity, this fact is not mentioned repeatedly in the remainder of the paper. However, the log-denomination is taken into account when the coefficients are interpreted.

Solving this relation for Δy yields the change in units of the left-hand-side variable:

$$\Delta y = \frac{\beta \Delta x}{x} \tag{8}$$

One can then substitute the absolute value of the estimated coefficient for β and the cross-sectional standard deviation of the underlying variable (in units) for Δx. This yields, for a fixed value of x, the resulting unit change in the left-hand-side variable. Table 2 shows the results of this exercise, where y corresponds to the ability to make ends meet and x to the mean and the standard deviation of labor income. Both x variables are examined at the 25^{th}, 50^{th} and 75^{th} percentile to capture the size of their effects in different parts of the distribution.

Table 2: Interpretation and Size of the Impact of Labor Income on Welfare

	ECHP						EU-SILC				
	Corresponding specification in Table 1:										
	(1)	(2)	(3)	(4)	(5)		(1)	(2)	(3)	(4)	(5)
	Mean of Labor Income *						Mean of Labor Income *				
25%	0.60	0.56	0.52	0.51	0.76	*25%*	0.71	0.68	0.67	0.67	0.96
50%	0.38	0.36	0.34	0.33	0.49	*50%*	0.38	0.37	0.36	0.36	0.52
75%	0.26	0.25	0.23	0.23	0.34	*75%*	0.21	0.20	0.20	0.20	0.29
	Std. Dev. of Labor Income *						Std. Dev. of Labor Income *				
25%	-0.14	-0.14	-0.15	-0.13	-0.11	*25%*	-0.07	-0.09	-0.21	-0.19	-0.12
50%	-0.08	-0.08	-0.08	-0.08	-0.06	*50%*	-0.03	-0.04	-0.10	-0.09	-0.06
75%	-0.05	-0.05	-0.05	-0.05	-0.04	*75%*	-0.02	-0.02	-0.05	-0.04	-0.03
	Implicit Risk Premium **						Implicit Risk Premium **				
25%	24	25	28	26	15	*25%*	10	13	31	28	13
50%	21	23	25	24	13	*50%*	9	12	28	25	11
75%	19	20	22	21	11	*75%*	8	10	24	22	10

Notes:
*: Change in units of the *Ability to Make Ends Meet* following a cross-sectional one-standard-deviation change in the *Mean* or the *Standard Deviation of Labor Income*. The labels 25%, 50%, and 75% represent the evaluation of these effects at the corresponding percentiles in each of the two distributions.
**: The "Implicit Risk Premium" corresponds to the share of welfare, arising from a typical increase in the *Mean of Labor Income*, that the average household would be willing to give up in order to eliminate a typical amount of its labor income risk. The evaluation takes place following an increase in the *Mean* and in the *Standard Deviation of Labor Income* by one cross-sectional standard deviation.

The two top panels of the Table 2 show that a one-standard-deviation increase in the mean of labor income raises the ability to make ends meet, depending on the estimator and the distribution percentile used, between 0.23 and 0.76 in the ECHP data set and between 0.20 and 0.96 in the EU-SILC data set. The two center panels show the corresponding outcome for a one-standard-deviation increase in the standard deviation of labor income. Although a change

in the standard deviation of labor income by one cross-sectional standard deviation may not be considered a "small" change, it gives a rough idea of how much a more volatile labor income process can reduce financial well-being. The size of this effect on the ability to make ends meet in the ECHP data set ranges from -0.14 at the 25^{th} percentile in Specification (1) to -0.04 at the 75^{th} percentile in Specification (5), and in the EU-SILC data set from -0.21 at the 25^{th} percentile in Specification (3) to -0.02 at the 75^{th} percentile in Specifications (1) and (2). Finally, the two bottom panels relate the above-mentioned effects to each other. By taking the ratio of the change in the ability to make ends meet following a cross-sectional one-standard-deviation increase in the standard deviation of labor income and the change in the ability to make ends meet following a cross-sectional one-standard-deviation increase in the mean of labor income, an "Implicit Risk Premium" can be calculated. This implicit risk premium could be thought of as the share of welfare, arising from a typical increase in permanent labor income, that the average household would be willing to give up in order to eliminate a typical amount of its labor income risk. Depending on the estimators and the distribution percentile used for evaluation, this measure takes on values from 11% to 28% in the ECHP and from 8% to 31% in the EU-SILC data set. Hence, this section shows that labor income risk has a clearly negative effect on household welfare. Moreover, the effect is robust to a variety of fixed effects and also matters in economic terms.

4.2 The Role of Financial Integration

Now that the last subsection has documented a negative impact of labor income risk on the ability to make ends meet, this subsection examines the contribution of financial integration to insuring households against labor income shocks. The results for both data sets are shown in Table 3.

Based on Equation (3), which assesses the insurance effect of financial integration from the perspective of the average household in the sample, eight specifications using different measures of financial integration are estimated for each of the data sets. In addition, for the EU-SILC data set, a ninth specification is estimated containing the previously introduced composite index of foreign equity asset holdings by households as the financial integration variable. Following the results of the last subsection, all specifications are estimated with the inclusion of household (and time) fixed effects, since the corresponding set-up is the most conservative. A resulting disadvantage is, however, that time-constant variables have to be dropped from the regression and thus the coefficients for the mean and the standard deviation of labor income can no longer be identified. For simplicity, household and country controls are again not reported and only the key terms of interest are depicted in the table. These include the coefficient of total income, the coefficient for the level effect of financial integration, *Financial Integration*, and the coefficient for the interaction term of labor income risk and financial integration, *Standard Deviation of Labor Income* x *Financial Integration*.[24]

The top panel of Table 3 presents the results for the ECHP and the bottom panel the results

[24]Because of the above-described use of the within-estimator, the level term for labor income risk is absorbed by the household fixed effects and thus cannot be reported.

Table 3: The Impact of Financial Integration

Top Panel: ECHP

Dependent Variable: "Ability to Make Ends Meet"	Gross Financial Integration	Portfolio Equity Assets	Portfolio Debt Assets	Portfolio Debt Liabilities	Bank and Other Assets	Bank and Other Liabilities	Interest Rate Spread	Inv. Fund Shares of Households	Foreign Holdings of Households
Total Income	0.192***	0.192***	0.192***	0.193***	0.194***	0.194***	0.193***	0.175***	-
	(0.00)	*(0.00)*	*(0.00)*	*(0.00)*	*(0.00)*	*(0.00)*	*(0.00)*	*(0.00)*	-
Financial Integration	-0.002***	-0.016***	-0.015***	-0.016***	-0.012***	-0.012***	0.095***	-0.024***	-
(see column label)	*(0.00)*	*(0.00)*	*(0.00)*	*(0.00)*	*(0.00)*	*(0.00)*	*(0.00)*	*(0.00)*	-
Std. of Labor Income	0.000***	0.002***	0.002***	0.002***	0.002***	0.002***	-0.008***	0.002***	-
x Financial Integration	*(0.00)*	*(0.00)*	*(0.00)*	*(0.00)*	*(0.00)*	*(0.00)*	*(0.00)*	*(0.00)*	-
Part. marg. effect, high FI	0.10***	0.05***	0.07***	0.08***	0.09***	0.13***	0.01***	0.03***	-
Part. marg. effect, low FI	0.04***	0.01***	0.02***	0.04***	0.05***	0.05***	0.00***	0.02***	-
Diff. in part. marg. effects	*0.06****	*0.04****	*0.05****	*0.04****	*0.04****	*0.08****	*0.01****	*0.01****	-
Observations	121,659	121,659	110,081	110,081	110,081	110,081	121,659	107,062	-
Households	17,929	17,929	16,275	16,275	16,275	16,275	17,929	18,069	-
Countries	11	11	10	10	10	10	11	11	-
R-squared	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	-

Bottom Panel: EU-SILC

Dependent Variable: "Ability to Make Ends Meet"	Gross Financial Integration	Portfolio Equity Assets	Portfolio Debt Assets	Portfolio Debt Liabilities	Bank and Other Assets	Bank and Other Liabilities	Interest Rate Spread	Inv. Fund Shares of Households	Foreign Holdings of Households
Total Income	0.054***	0.052***	0.053***	0.055***	0.055***	0.054***	0.062***	0.063***	0.071***
	(0.00)	*(0.00)*	*(0.00)*	*(0.00)*	*(0.00)*	*(0.00)*	*(0.00)*	*(0.00)*	*(0.00)*
Financial Integration	-0.002***	-0.011**	-0.020***	-0.008***	-0.004***	-0.006***	0.081	0.001	-0.037
(see column label)	*(0.00)*	*(0.04)*	*(0.00)*	*(0.00)*	*(0.00)*	*(0.00)*	*(0.15)*	*(0.94)*	*(0.34)*
Std. of Labor Income	0.000***	0.003***	0.003***	0.001***	0.001***	0.001***	0.000	0.001	0.008
x Financial Integration	*(0.00)*	*(0.00)*	*(0.00)*	*(0.00)*	*(0.00)*	*(0.00)*	*(0.95)*	*(0.23)*	*(0.11)*
Part. marg. effect, high FI	0.12***	0.14***	0.17***	0.07***	0.05***	0.06***	0.00	0.02	0.03
Part. marg. effect, low FI	0.04***	0.01***	0.02***	0.01***	0.01***	0.02***	0.00	0.01	0.00
Diff. in part. marg. effects	*0.08****	*0.13****	*0.15****	*0.06****	*0.04****	*0.04****	*0.00*	*0.01*	*0.03*
Observations	84,031	84,031	84,031	84,031	84,031	84,031	86,952	85,710	55,350
Households	33,466	33,466	33,466	33,466	33,466	33,466	28,984	28,570	18,450
Countries	22	22	22	22	22	22	20	17	11
R-squared	0.01	0.02	0.01	0.01	0.01	0.01	0.01	0.02	0.02

for the EU-SILC data set.[25] With the exception of the *Interest Rate Spread* specification, all specifications examine the effect of financial integration on the ability to make ends meet through a reduction in the (negative) impact of labor income risk. Thus, coefficient β_6, on the interaction term of labor income risk and financial integration is expected to carry a positive sign. Since, on the other hand, an increase in the spread over the German long-term interest rate is considered to be a reduction in financial integration, the interest rate spread specification is expected to carry an opposite sign on the interaction term.

Turning to the interpretation of the results, the key coefficients in 14 out of 17 specifications are highly significant and have the expected sign. Total income enters positively in all specifications and has a size similar to the one seen in the previous household-fixed-effects specifications in Table 1.[26] In this instance, the focus lies on the interaction between labor income risk and the various financial integration measures. It can be seen that all interaction terms involving the Lane and Milesi-Ferretti measures are positive. This finding holds across both data sets and implies that more financial integration increases the ability to make ends meet by reducing the negative impact of labor income risk. The measures comprise *Gross Financial Integration*, *Portfolio Equity Assets*, *Portfolio Debt Assets*, *Portfolio Debt Liabilities*, *Bank and Other Assets*, *Bank and Other Liabilities* – all in % of GDP. Hence, financial integration has a positive impact on household welfare for the average household in the sample by mitigating the negative welfare impact of labor income risk. The same holds also for the *Investment Fund Shares* specification in the ECHP sample, which contains a highly significant interaction term that also carries a positive sign. This is not the case in the EU-SILC sample, however, where the interaction term on the investment fund shares has become insignificant. Since the investment fund shares variable does not contain information about where the related investment funds have made their investments, the use of the composite index, which also takes the exposure of investment funds into account, is preferable. Although insignificant as well, the p-value of 11% on the positive interaction term indicates that this measure is also in line with the previous measures. Owing to its different definition, the interaction terms in the price-based *Interest Rate Spread* specification is expected to have a negative sign, since a higher spread indicates a lower level of financial integration. Since the coefficient on the interaction term in the interest rate spread specification is indeed negative and significant in the ECHP data set, the interpretation that financial integration is welfare-increasing applies also here.

[25] Data availability is slightly restricted for measures of financial integration in the first year of the ECHP data set and in the last year of the EU-SILC data set. More specifically, there are no data on some of the Lane and Milesi-Ferretti measures for Greece during the early years of the ECHP sample. Hence, Greek households are excluded from all *Portfolio Debt* and *Bank and Other* specifications in the top panel of Table 3. Further, financial integration measures in the *Interest Rate Spread* specification and the *Investment Fund Shares* specification are not available before 1995 for any of the countries and thus the corresponding specifications cover only six years for most of the countries (the exception is Finland, which is present for five years). At the end of the sample period, the Lane and Milesi-Ferretti measures are only available until 2007. Hence, the requirement of a three-year presence for each household in the EU-SILC is relaxed and replaced by a two-year presence (the standard deviation of labor income has nevertheless been calculated over three years). During this period, the Lane and Milesi-Ferretti measures are available for all 22 countries. However, this is not the case for the interest rate spread measure and the investment fund shares measures, which are available for most but not all countries.

[26] The level terms of the financial integration variables lack a clear interpretation, since they indicate the effect of financial integration on the ability to make ends meet for a zero value of labor income risk, a condition that is not fulfilled in the sample.

To obtain a better interpretation of the interaction terms, the total marginal effects of labor income risk according to Equation (4) are calculated. Since the analysis is carried out using the within estimator, it is not possible to recover the value of coefficient β_3. Instead, only the positive part, the differential effect due to the presence of financial integration, is examined.[27] This effect has to be considered a counterpart to the negative level effect of labor income risk that was shown throughout all specifications in Table 1. As stated above, the total marginal effect without the level term will be referred to as the *partial marginal effect*. Since the effect of labor income risk depends on the level of financial integration, the partial marginal effect is evaluated at two different levels of financial integration. First, a low level of financial integration at the 25^{th} percentile of the financial integration distribution is considered. Then, a high level of financial integration at the 75^{th} percentile is considered. The use of these two percentiles represents a possible transition-range for a country that exhibits a less-than-average degree of financial integration. Although the welfare effects could be larger for stronger financial integration dynamics, this analysis intends to capture primarily the gains from financial integration for a typical country.

Again, the analysis is carried out separately for both of the data sets. The two panels in Table 3 show the size of the partial marginal effects for each of the specifications below the regression results, labelled as *Part. marg. effect, high/low FI*. Their significance is assessed with an F-test. The resulting p-value ranges are indicated as usual with stars beside each of the partial marginal effect values. As expected from the presence of significant interaction terms, we observe substantial differences between the partial marginal effects in highly and less financially integrated countries. While the measure of *Gross Financial Integration* from the Lane and Milesi-Ferretti data set indicates similar gains from financial integration in both data sets, the disaggregated measures point to critical changes over time. During the period of the ECHP data set, the largest gains from financial integration – measured as the difference between the partial marginal effects in highly integrated countries and less-integrated countries – are recorded for *Bank and Other Liabilities*. For the period of the EU-SILC data set, however, the largest gains are recorded for two asset-side measures, *Portfolio Equity Assets* and *Portfolio Debt Assets*.

These observations suggest a change in the nature of the insurance that financial integration provides over time. Drawing on the discussion of potential insurance channels in Section 2.2.3, the current exercise gives a first indication about how financial integration has improved the welfare of households at different points in time. The strong gains from financial integration in countries with a high level of *Bank and Other Liabilities* during the ECHP sample period, on the one hand, indicates that financial integration in Europe worked primarily through an improvement in the liability side of the household balance sheet and, more specifically, through the banking system during the 1990s. This could refer to either improving the terms of loan contracts (*direct benefits*) or creating access to credit in the first place (*indirect benefits*). Both channels – but especially the second one – allow households to reduce their level of inefficient precautionary savings since financial integration reduces their credit constraints. The strong gains from financial integration during the EU-SILC period, on the other hand, suggests that financial integration worked mainly through asset-side channels over the past decade. Specifi-

[27] It should be noted that the two percentiles and the sign of the coefficient for the *Interest Rate Spread* measure have been reversed to make it comparable with the other measures.

cally, the high gains associated with portfolio equity assets and portfolio debt assets imply that, in this instance, the underlying improvements were primarily market instead of bank based. By increasing the access of households to financial markets to begin with (*indirect benefits*) or improving the quality and return profile of financial products (*direct benefits*), financial integration might have helped households to invest their savings in a more efficient way.

Overall, this subsection has shown that there are substantial gains from financial integration and that there has been a transition of the insurance effect of financial integration from the liability side to the asset side of the household balance sheet over time. However, this subsection was agnostic about whether these gains were direct or indirect in nature – a topic that the next subsection examines more explicitly.

4.3 The Impact of Financial Integration Across Households

Finally, the positive effect of financial integration on the average household in the sample is disaggregated according to the current exposure of households to the financial system. As discussed in Section 2.2.3, this allows testing whether the majority of gains from financial integration are *direct* or *indirect* in nature. The results of this exercise are presented in Table 4.

Owing to the finding that financial integration worked through different sides of the balance sheet at different points in time, the variable measuring financial integration in this exercise is kept as broad as possible. Hence, all specifications in this section rely on the measure of *Gross Financial Integration* in % of GDP.[28] In addition, based on Specification (5), households are divided into different groups regarding their current exposure to the financial system. Following the discussion in Section 2.2.3 and in Appendix A, there are five measures of household heterogeneity in the form of dummy variables that indicate how households are allocated to the groups of exposed and non-exposed households. The measures comprise being a capital income receiver, working in the banking sector, owning a house, being among the top 50% of the income distribution and being a mortgage debt holder. For both of the data sets, each measure is represented by a column label in Table 4.[29]

To keep the analysis tractable, only two types of information are displayed. First, each column contains the sign and the level of significance of the associated triple interaction term that multiplies the standard deviation of labor income by the financial integration measure and the dummy for financial system exposure.[30] The triple interaction term therefore shows the differential effect of financial integration in mitigating the negative impact of labor income risk for households that are exposed to the financial system and households that are currently not exposed to the financial system. And second, each column contains a set of diff-in-diff results that are derived from the underlying partial marginal effects. Since the effect of financial integration on financial well-being is now split up according to the current exposure of households to the

[28]The results using *Equity Assets in % of GDP* as a measure of financial integration are very similar.

[29]There is no detailed information on the work sector of a household available in the EU-SILC data set. Hence, the category "working in the banking sector" is present only in the ECHP data set.

[30]Given the large product of the three variables, the coefficient on the interaction terms is very small. Since all triple-interaction-term coefficients are zero until at least the first three positions after the decimal point, I do not display them separately here.

financial system, the two partial marginal effects from the previous section become four.[31]

Table 4: The Effect of Financial Integration Across Households

Top Panel: ECHP

Dependent Variable: "Ability to Make Ends Meet"	Capital Income Receiver	Work in Banking Sector	House Owner-ship	Top 50% of HH Income	Mortgage Debt Holder
Sign of the triple interaction term	neg.	pos.	neg.	neg.	neg.
Associated p-value	*(0.03)*	*(0.62)*	*(0.01)*	*(0.08)*	*(0.78)*
Part. marg. effect, high FI, exp.	0.12***	0.17***	0.20***	0.14***	0.06**
Part. marg. effect, low FI, exp.	0.08***	0.10	0.16***	0.09***	0.03
Part. marg. effect, high FI, non-exp.	0.11***	0.08***	0.15***	0.11***	0.06**
Part. marg. effect, low FI, non-exp.	0.05***	0.04***	0.06***	0.04***	0.02**
Memo: Diff. for exp. HH	*0.04*	*0.07*	*0.04*	*0.05*	*0.03*
Memo: Diff. for non-exp. HH	*0.06*	*0.04*	*0.09*	*0.07*	*0.04*
Difference of the differential effects	-0.02**	0.03	-0.05**	-0.02*	-0.01
Observations	121,659	103,528	121,532	121,659	80,663
Households	17,929	15,135	17,910	17,929	11,890
Countries	11	11	11	11	11
R-squared	0.02	0.02	0.02	0.02	0.02

Bottom Panel: EU-SILC

Dependent Variable: "Ability to Make Ends Meet"	Capital Income Receiver	Work in Banking Sector	House Owner-ship	Top 50% of HH Income	Mortgage Debt Holder
Sign of the triple interaction term	neg.	-	pos.	pos.	neg.
Associated p-value	*(0.74)*	-	*(0.04)*	*(0.04)*	*(0.96)*
Part. marg. effect, high FI, exp.	0.14***	-	0.12***	0.15***	0.08**
Part. marg. effect, low FI, exp.	0.06***	-	0.03	0.04*	0.05**
Part. marg. effect, high FI, non-exp.	0.12***	-	0.04	0.11***	0.05
Part. marg. effect, low FI, non-exp.	0.04***	-	0.01	0.03***	0.02
Memo: Diff. for exp. HH	*0.08*	-	*0.09*	*0.11*	*0.03*
Memo: Diff. for non-exp. HH	*0.08*	-	*0.03*	*0.08*	*0.03*
Difference of the differential effects	0	-	0.06**	0.03**	0
Observations	77,222	-	84,007	84,031	60,401
Households	30,370	-	33,457	33,466	24,476
Countries	18	-	22	22	17
R-squared	0.02	-	0.02	0.02	0.02

[31]The partial marginal effects exist (i) for households that are currently exposed to the financial system and reside in a country with high financial integration; (ii) for households that are currently exposed to the financial system but reside in a country with low financial integration; (iii) for households that are currently not exposed to the financial system and live in a country with high financial integration; (iv) for households that are currently not exposed to the financial system and live in a country with low financial integration.

Using these four partial marginal effects, we can then compute the difference (i.e., the *diff-in-diff effect*, defined as the difference between *diff 1* and *diff 2*) between two households that are currently exposed to the financial system but live in countries with different degrees of financial integration (*diff 1*) and between two households that are currently unexposed and live in countries with different financial integration levels (*diff 2*). The final result is equivalent to comparing the difference between an exposed and an unexposed household (*diff 1*) across a high- and a low-financial-integration environment (*diff 2*).[32]

We can now apply these procedures to the results in Table 4. The first column contains the interaction term and the marginal effects for households that receive capital income (i.e., the first proxy variable for financial system exposure) in the ECHP data set. The corresponding triple interaction term is negative and significant with a p-value of 0.03. Turning to the partial marginal effects and the associated diff-in-diff analysis, we can see the following. The difference in the partial marginal effect between two households that receive capital income but that live in countries with different degrees of financial integration amounts to 0.04 (i.e., memo line *Diff. for exp. HH*). The difference between two households that do not receive capital income in the same set of countries amounts to 0.06 (i.e., memo line *Diff. for non-exp. HH*). Hence, the overall diff-in-diff effect corresponds to the difference of these two differences (i.e., line *Difference of the differential effects*), which amounts to -0.02. Thus, in line with the evidence from the negative and significant triple interaction term, this result suggests that households currently not receiving capital income profit significantly more from financial integration than households currently receiving capital income. However, it should be noted that both first-order differences (i.e., *Diff. for exp. HH* and *Diff. for non-exp. HH*) are clearly positive and thus financial integration brings a positive overall effect to both types of households. The only qualification is that households currently not exposed to the financial system, as measured by the presence of capital income, profit *even more* from financial integration than households that already receive capital income. It is important to keep this distinction in mind throughout the remainder of this analysis.

The results of the other columns are as follows. Most of the significant results are concentrated in the columns that contain the variables *house ownership* and *being among the top 50% of the income distribution* as measures of financial system exposure. For both variables, the triple interaction terms are highly significant in both of the data sets. Along with significant differences in the diff-in-diff effects of both variables, this suggests that both the wealth and the income channel play an important role in the transmission of the benefits from financial integration to the household sector. However, the analysis also shows that the signs of the triple interaction terms and the direction of the diff-in-diff effects for the two variables point in an opposite direction in the two data sets. While both are negative in the ECHP sample, they become positive in the EU-SILC data set. This observation in turn has important consequences for the predominant nature of the gains from financial integration. And relating these insights to the categories of *direct* and *indirect* benefits from financial integration, as discussed in Section 2.2.3, allows us to eventually determine their relative importance.

When, on the one hand, the diff-in-diff effect is negative, the benefits from financial integra-

[32] In addition, when abstracting from rounding differences, the diff-in-diff effect should communicate the same information as the triple interaction term regarding the sign and significance of the results.

tion and those from currently being exposed to the financial system are substitutes. An increase in financial integration will therefore profit primarily households that are currently not exposed to the financial system (e.g., because of a lack in access to certain financial services). Households that are already exposed to the financial system (e.g., because they already have access to the banking sector or to the financial market) will profit less from financial integration in such an environment. Hence, the negative diff-in-diff effect suggests the dominance of indirect benefits from financial integration. This is primarily the case in the ECHP data set, which covers the period from 1994 to 2000.

When, on the other hand, the diff-in-diff effect is positive, the benefits from financial integration and those from currently being exposed to the financial system are complements. Therefore, an increase in financial integration will benefit primarily households that are already exposed to the financial system. Households that are not currently exposed to the financial system (e.g., because they do not have access) will profit less from financial integration in such a environment. Hence, the positive diff-in-diff effect suggests the dominance of direct benefits from financial integration. This is mainly the case in the EU-SILC data set, which covers the years 2004-2008.

Returning now to the other variables, Table 4 indicates that the presence of capital income in the EU-SILC data set, a professional association with the banking sector in the ECHP data set or the presence of mortgage debt in either of the data sets do not constitute the main channels for the transmission of financial integration benefits to the household sector, since their triple interaction terms were insignificant in all cases. While this is certainly a possible outcome, two alternative explanations could lead to the same outcome.

First, the empirical analysis is targeted to measure and categorize gains from financial integration by grouping households according to their current exposure to the financial system. While this criterion serves as a simple and powerful tool to take the heterogeneity of households into account, this categorization does not capture all gains from financial integration. As discussed in Section 2.2.3, a certain share of the indirect benefits also occurs for households that are already exposed to financial markets. This could be either in a straightforward (e.g., households counted as currently exposed to the financial system receive additional access to financial services that pertain to "the other" side of their balance sheet) or in a more complex way (e.g., an improvement in financial regulation at the European level increases both the quality of financial products that exposed households use and access to the financial system for currently non-exposed households). When such indirect benefits are large relative to all other distinguishing factors between the two groups of households, an overall very positive impact of financial integration on the average household in the sample might be accompanied by a diff-in-diff effect that is very small or even insignificant.

Second, and even though the analysis accounted for heterogeneity in the household sector along different dimensions, the focus of this exercise is still to assess the nature of the gains from financial integration from a macro-perspective. Hence, I focus on gains that emerge for larger subgroups of the population.[33] However, the impact of financial integration on the subset of

[33]In addition, by defining the highly financially integrated country as being at the 75^{th} percentile and the less financially integrated country at the 25^{th} percentile of the financial integration distribution instead of higher/lower percentiles, the analysis chooses rather conservative values that place an upper bound on the benefits from financial integration but increase the external validity of the results.

extremely wealthy households might be very different. Having access to more financial resources, more need for an internationally diversified portfolio and possibly also more sophisticated investment strategies, the gains from financial integration could be even larger than for a regular household. Being originally constructed to assess the degree of poverty in the European Union, the ECHP and the EU-SILC data sets do not oversample wealthy households and thus make it difficult to examine their experience with financial integration in a meaningful way. Indeed, and additionally supported by the fact that European households have a lower preference for risky investments, the share of capital income to total income in the ECHP data set for the average household amounts to only around 2%. This could serve as an additional explanation for the transmission of only weak (in the ECHP data set) or even close-to-zero (in the EU-SILC data set) gains from financial integration through the capital income channel in the analysis.

5 General Discussion

This section briefly summarizes the empirical findings and places them in the framework that was introduced in Section 2. It also discusses possible limitations to the empirical analysis and examines the robustness of the results along several key dimensions.

5.1 The Insurance Function of Financial Integration

This subsection aims to reconcile the empirical results in this paper with the framework shown in Figure 1. A key objective of the paper was to shed more light on the insurance function of financial integration in the context of the household sector. The following results have emerged from the analysis.

The first part of the results section demonstrated a negative impact of labor income risk on the financial well-being of households. The presence of idiosyncratic shocks, inherent in household-level data, and the use of a measure of subjective well-being yielded intuitive results of sizable magnitude, reinforcing the importance of households to insure against these risks.

The second part of the results section examined the role of financial integration in mitigating the negative impact of labor income risk. And from the perspective of the average household in the sample, financial integration indeed succeeded in doing so. The exercise also showed that during the first part of the sample period, corresponding to the time period that is covered by the ECHP data set, the majority of gains from financial integration emerged from liability-side instruments, such as loans, associated primarily with the banking sector. The second part of the sample period, corresponding to the years covered by the EU-SILC data set, indicated that the more recent gains from financial integration are obtained through the asset side of the balance sheet and thus relate more closely to the financial market environment.

Finally, the third part of the results section investigated in more detail the underlying channels for the positive impact of financial integration on the average household in the sample. Following a categorization by Kose et al. (2006), who divide benefits from financial integration into direct and indirect ones, I used the current exposure of households to the financial system as a proxy for the presence of direct effects. This first allows the examination of the channels through which financial integration works, and, second, it helps identify the distributional effects

of financial integration across households. The results of this exercise indicate that while the overall gains for both groups of households were positive, mirroring the results of the previous section, there is somewhat limited evidence for the presence of direct effects. The analysis does find, however, that direct effects play a more important role during the recent sample period, while earlier benefits appear to be primarily indirect in nature.

How does this now shed light on the insurance function of financial integration? The combined set of results suggests that financial integration in the early days worked through the banking system in particular and thus primarily through the liability side. At the same time, benefits from financial integration seemed to be mostly indirect in nature, suggesting that access to credit (extensive margin) rather than an improvement of quality of existing credit contracts (intensive margin) was the main force. Better access to credit relaxes credit constraints and thus allows households to reduce their amount of inefficient precautionary savings. At this time, households with below-average incomes and low wealth levels profited more. In more recent years, when financial integration seemed to work mainly through the asset-side channel, e.g., through portfolio equity and debt investments, it mainly benefited financial markets. At the same time, there is more evidence for direct benefits from financial integration, suggesting that wealthier households and higher-income households profited more. By gaining more from an increasing quality of existing assets (e.g., lower default probability, more liquidity or new financial innovations), households that were already exposed to financial markets did better in relative terms. In addition, there is an interesting match between the measures of household heterogeneity, which are skewed toward a representation of the asset side, and stronger evidence of direct effects at a time when benefits come primarily through the asset-side channel.

Hence, by taking household heterogeneity into account in the analysis of the impact of financial integration on financial well-being of households, we have obtained new insights in the insurance process of financial integration. We have seen that financial integration might have played a changing role over time and potentially also across countries, thus reinforcing the importance of examining the question over a longer time span and across a broad set of countries. The remainder of this section discusses the key challenges and limitations of the empirical analysis in this paper and addresses them with a set of targeted robustness tests.

5.2 Robustness and Sensitivity of the Results

The first set of robustness specifications deals with the use of alternative measures of household heterogeneity and complements the analysis in Section 4.3.[34] Since the two data sets do not provide quantitative household balance sheet data, the measures of financial system exposure were fairly general. I therefore carry out an additional set of robustness checks by using alternative definitions of current exposure to the financial system. I include both measures that are broader in nature (e.g., owning a car instead of a house, working for the real estate sector instead of the banking sector) and measures that are more targeted at wealthier households (e.g., owning a

[34] In addition to varying the measures of household heterogeneity, one could also examine alternative measures of financial integration. Two different approaches have been carried out in this paper. While Section 4.2 implicitly tested the sensitivity of the results for the average household in the sample to a broad variety of different financial integration measures, the disaggregated results in Section 4.3 are also confirmed when equity assets are used instead of the more general gross financial integration measure.

second house, being among the top 10% of the income distribution). The ECHP data set also allows replacing the mortgage debt variable with an indicator variable for consumer debt – a type of debt that might be more explicitly used to insure against negative income shocks. The results of the robustness exercise are displayed in Table 10 in Appendix B.[35] Comparing the coefficients of the robustness exercise with those of the regular analysis, we find that the results are very similar. The two wealth measures, i.e., owning a car and owning a second house, as well as the measure for being among the top 10% of the income distribution, show a negative and significant[36] triple interaction term in the ECHP data set and thus correspond closely to the results of the main analysis. In addition, the real estate sector specification delivers very similar results to the banking sector specification, and the consumer debt specification also confirms the results of the previous analysis. Also in the EU-SILC data set, the coefficients of the car ownership and the top 10% income specifications match the positive pattern of the main analysis. However, their triple interaction terms are insignificant in these instances.

The second set of the robustness specifications deals with potential endogeneity concerns at different stages of the empirical specification. In the econometric approach of the main text the ability to make ends meet was regressed on total income, for example. Economic theory considers income as exogenous and consumption as a way of allocating it among different uses. Nevertheless, in this specific set-up, having a good ability to make ends meet could derive from a high level of household wealth that, in turn, generates capital income. As capital income enters the specifications via total income, the coefficients of all variables in the regression may be affected. However, as indicated above, the share of capital income in total income amounts to about 2% for the average household in the sample and therefore limits potential endogeneity concerns in this direction substantially. Another problem may arise, when households with a good ability to make ends meet demand more financial products from abroad and therefore cause the level of financial integration in the region to rise. However, since financial integration is measured at the country level and individual households cannot affect the aggregated measures significantly, this channel is not considered to be a serious issue in the context of this paper. A final problem may arise from the inclusion of the mean and the standard deviation of labor income in the regression. This step may violate the strict exogeneity assumption of the ordinary least squares model. Therefore, the next paragraph pursues an alternative estimation strategy (henceforth referred to as the *robustness approach*) to assess the robustness of the results found with the main approach. The robustness approach will reassess the results of the baseline specification and the findings regarding the impact of financial integration on welfare for the EU-SILC data set.

The idea of the robustness approach is to leave both the mean and the standard deviation of labor income out of the empirical specification and thus reduce potential endogeneity concerns. This is achieved by splitting the samples according to the standard deviation of labor income into households with low and with high labor income risk. One would then expect that an increase in financial integration leads to a stronger welfare improvement in the group of households with a high labor income risk. The approach proceeds as follows. First, the logarithm of labor income is regressed on a dummy for higher education, the age of the household head and the square of the

[35] It also should be mentioned that a number of variables are available only in the ECHP data set.

[36] The variable for the second house is significant only at the 11% level.

age variable. By introducing these control variables, one can proxy for a household's expected changes in labor income over the life cycle. Hence, the residuals of this regression can be interpreted as unexpected shocks to the labor income of a household. Therefore, the separation between expected and unexpected income changes takes place analogously to the approach in the main text. In the next step, the standard deviation of these residuals is taken. Because of the nature of the robustness approach, it is no longer necessary to control for the mean of labor income, since its effect was purged by controlling for the expectable income profile. Hence, all variables included in the analysis will be time varying (with the exception of the gender and education dummies in the cross-sectional approaches), which substantially reduces endogeneity concerns. As suggested above, to split the sample into households with a low and a high labor income risk, a dummy variable is created that takes on the value of 1 when a household has a higher standard deviation of labor income compared with the median household in its country. The definition of the dummy variables is carried out in relation to the country, since this ensures, that in all specifications, a complete sample of countries will be included. Since the robustness approach turns out to be more sensitive to the selection of countries, I exclude Cyprus and Iceland in addition to Luxembourg and Ireland from the financial integration specifications, since all four countries serve, at least to some extent, as money centers and exhibited very strong financial integration dynamics during the past decade.

The results are very much in line with those of the main approach. All tables appear in Appendix B. Starting with the replication of the baseline specification, Table 11 shows the results for Specification (1) (without fixed effects), Specification (3) (including time and country fixed effects), and Specification (6) (including time and household fixed effects) from Table 1 with the robustness approach for both data sets. The column labels (a) and (b) indicate for each specification the previously mentioned subsample with a low and a high degree of labor income risk. To document the negative impact of labor income risk on the ability to make ends meet, coefficients have been standardized by subtracting the mean. Hence, the relative size of the two constants capture the impact of labor income risk. And, indeed, it turns out that the subsamples with a higher labor income risk, i.e., the (b) columns, have a lower constant than the ones with a lower labor income risk, i.e., the (a) columns, across all specifications. This confirms that labor income risk has a negative impact on household welfare.[37] In the next step, the impact of financial integration on the ability to make ends meet is examined. For this exercise, the financial integration variables are included in the specifications one at a time without further interactions. One would now expect the positive effect of financial integration on the ability to make ends meet to be stronger for households with a higher labor income risk.[38] Table 12 confirms that this is indeed the case. In six out of nine cases, the coefficient of the financial integration measures in the lower panel, the one containing households with higher labor income risk, is higher.[39] Thus the findings of this approach also support the results from the main analysis.

[37]The same negative impact of labor income risk on the ability to make ends meet is obtained when the dummy variable is included directly in the regression.

[38]In this exercise, the constant is no longer standardized and therefore loses its interpretation.

[39]The exceptions are the *Interest Rate Spread* specification, which had already somewhat counterintuitive results in the main approach; the *Portfolio Equity Asset* specification, where both coefficients are relatively close and positive; and the *Portfolio Debt Liabilities* specification, which carries the opposite sign in this exercise.

6 Conclusion

This paper has examined the impact of financial integration on household welfare. It builds on an empirical literature of financial integration and risk sharing that has struggled to confirm substantial welfare gains from financial integration predicted by theoretical models. While maintaining an international perspective, the paper adds to the literature by simultaneously relaxing three restrictive assumptions that have featured prominently in the past: (i) on the ability of households to smooth idiosyncratic income shocks, (ii) on the way in which income risk affects household welfare, and (iii) on the distribution of potential welfare gains across households. The first and the third assumption were relaxed by relying on (international) household-level data for the empirical analysis; the second assumption was relaxed by using a measure of financial well-being as the dependent variable.

The analysis has delivered three key insights. First, using a household's personal assessment of its ability to make ends meet allows documentation of the expected negative impact of labor income risk on welfare through a reduction in a household's level of financial well-being. Second, financial integration can counterbalance this negative effect for the average household in the sample. Both findings are robust to the use of different data sets, different empirical approaches and across various measures of financial integration. And third, the paper investigates the underlying insurance function of financial integration more closely. Building on the work of Kose et al. (2006), who divide the gains from financial integration into direct and indirect benefits, this paper tests their relative contribution by splitting up the overall financial integration effect according to the exposure of households to the financial system. Overall, the results indicate that the predominant insurance function of financial integration in Europe has varied over time. During the 1990s, the largest benefits were primarily indirect in nature and occurred on the liability side of the household balance sheet, such as by providing access to credit for households with only limited initial exposure to the financial system. During the 2000s, however, the focus appears to have shifted to the asset side and financial integration benefited particularly those households that had previously invested in financial markets.

Two major routes of future research can be taken from here. First, a topical one, by comparing the gains from financial integration that occurred in the period prior to the global financial crisis, as documented in this paper, with those that occurred during the crisis period. In particular, households that reduce their precautionary savings as a consequence of better market access due to higher financial integration might be the first to suffer from a deterioration of economic conditions. However, the severe but heterogeneous impact of the financial crisis on the sample countries requires a careful treatment of differences in national social security systems, such as unemployment insurance or pension schemes, since unemployment or the crisis-induced decision to withdraw from the labor force become more prevalent in times of crises and affect the degree of financial well-being substantially. It would also be important to give more weight to non-market-based channels of insurance, such as intra-family risk sharing (e.g., through remittances), that might be of relatively higher importance during crisis periods.

Second, a methodological one, by taking into account the effect of financial integration on output volatility. The literature has shown that the impact of financial integration on output volatility can be ambiguous (see Kose et al., 2006). One view argues that financial integration

allows countries to diversify their industry structure more, resulting in lower output volatility. A second view is that financial integration allows countries to specialize more in certain industries, making them in turn more vulnerable to industry-specific shocks, resulting in a higher output volatility. Hence, it would be interesting to allow financial integration to also affect the labor-income-generation process in the empirical analysis by adding an equation that determines labor income and its volatility. The analysis could then differentiate between an indirect labor income channel that incorporates the exposure of a household's employer or industry sector to financial integration and a financial income channel that captures the direct exposure of households to financial integration via personal financial income. Based on the theoretical argument by Baxter and Jerman (1997) that households should take a substantial short position in domestic assets in order to hedge their human capital, such an approach would deliver valuable insights in the insurance practices of households in a truly integrated world.

References

Aiyagari, R.S., 1994. Uninsured Idiosyncratic Risk and Aggregate Saving. The Quarterly Journal of Economics 109(3), 659–684.

Akerlof, G.A., Kranton, R.E., 2000. Economics And Identity. The Quarterly Journal of Economics 115(3), 715–753.

Asdrubali, P., Kim, S., 2008. Incomplete Intertemporal Consumption Smoothing and Incomplete Risk Sharing. Journal of Money, Credit and Banking 40(7), 1521–1531.

Asdrubali, P., Sørensen, B.E., Yosha, O., 1996. Channels of Interstate Risk Sharing: United States 1963–1990. Quarterly Journal of Economics 111(4), 1081–110.

Athreya, K.B., 2002. Welfare implications of the Bankruptcy Reform Act of 1999. Journal of Monetary Economics 49(8), 1567–1595.

Attanasio, O., Davis, S.J., 1996. Relative Wage Movements and the Distribution of Consumption. Journal of Political Economy, 104(6), 1227–1262.

Backus, D., Kehoe, P., Kydland, F., 1992. International Business Cycles: Theory and Evidence, in: Cooley, T. (ed), Frontiers of Business Cycle Research, Princeton University Press, Princeton, 331–356.

Baxter, M., Jermann U.J., 1997. The international diversification puzzle is worse than you think. American Economic Review 87(1), 170–180.

Beck, T., Demirgüç-Kunt, A., Levine, R., 2000. A New Database on Financial Development and Structure. World Bank Economic Review 14, 597–605.

Becker, S.O., Hoffmann, M., 2010. Equity fund ownership and the cross-regional diversification of household risk. Journal of Banking & Finance 34(1), 90–102.

Bewley, T., 1983. A Difficulty with the Optimum Quantity of Money. Econometrica 51(5), 1485–1504.

Blundell, R., Pistaferri, L., Preston, I., 2008. Consumption Inequality and Partial Insurance. American Economic Review 98(5), 1887–1921.

Caselli, F., Ventura, J., 2000. A Representative Consumer Theory of Distribution. American Economic Review 90(4), 909–926.

Chatterjee, S., Corbae, D., Nakajima, M., Ros-Rull, J.-V., 2007. A Quantitative Theory of Unsecured Consumer Credit with Risk of Default. Econometrica 75(6), 1525–1589.

Chien, Y., Cole, H., Lustig, H., 2011. A Multiplier Approach to Understanding the Macro Implications of Household Finance. Review of Economic Studies 78(1), 199–234.

Cochrane, J.H., 1991. A Simple Test of Consumption Insurance. Journal of Political Economy 99(5), 957–976.

Cole, H.L., Obstfeld, M., 1991. Commodity trade and international risk sharing. Journal of Monetary Economics 28(1), 3–24.

Easterlin, R.A., 1974. Does Economic Growth Improve the Human Lot?, in: David P.A., Reder, M.W. (eds), Nations and Households in Economic Growth: Essays in Honor of Moses Abramovitz, Academic Press, Inc., New York, pp. 89-125.

Eurostat, 2011. European Community Household Panel (ECHP), ECHP User Database December 2003, research contract: *ECHP/2011/01.*

Eurostat, 2011. European Union Statistics on Income and Living Conditions (EU-SILC), EU-SILC Longitudinal User Database 2009, research contract: *EU-SILC/2011/29.*

Eurostat, 2011. European Union Statistics on Income and Living Conditions (EU-SILC), EU-SILC Longitudinal User Database 2008, research contract: *EU-SILC/2011/29.*

Eurostat, 2011. European Union Statistics on Income and Living Conditions (EU-SILC), EU-SILC Longitudinal User Database 2007, research contract: *EU-SILC/2011/29.*

Fernández-Villaverde, J., Krueger, D., 2011. Consumption And Saving Over The Life Cycle: How Important Are Consumer Durables? Macroeconomic Dynamics 15(05), 725–770.

Flood, R.P., Marion, N.P., Matsumoto, A., 2012. International Risk Sharing During the Globalization Era. Canadian Journal of Economics, 45(2), 394-416.

Fugazza, C., Giofré, M., Nicodano, G., 2011. International diversification and industry-related labor income risk. International Review of Economics & Finance 20(4), 764–783.

Gali, J., 1994. Keeping Up with the Joneses: Consumption Externalities, Portfolio Choice, and Asset Prices. Journal of Money, Credit and Banking 26(1), 1–8.

Giannone, D., Reichlin, L., 2006. Trends and Cycles in the Euro Area: How Much Heterogeneity and Should We Worry About It?. ECB Working Paper No. 595.

Guvenen, F., 2011. Macroeconomics with Hetereogeneity: A Practical Guide. NBER Working Papers No. 17622.

Guvenen, F. 2007. Do Stockholders Share Risk More Effectively than Nonstockholders? The Review of Economics and Statistics 89(2), 275–288.

Heathcote, J., Perri, P., 2008. The International Diversification Puzzle is Not as Bad as You Think. CEPR Discussion Paper 6982, Centre for Economic Policy Research, London. The paper is now published under the same title in the Journal of Political Economy 121(6), 1108 – 1159.

Heathcote, J., Storesletten K., Violante, G.L., 2014. Consumption and Labor Supply with Partial Insurance: An Analytical Framework, American Economic Review 104(7), 2075–2126.

Heathcote, J., Storesletten, K., Violante, G.L., 2009. Quantitative Macroeconomics with Heterogeneous Households. Annual Review of Economics 1(1), 319–354.

Imbs, J., 2006. The Real Effects of Financial Integration. Journal of International Economics 68(2), 296–324.

Jappelli, T., Pistaferri, L., 2011. Financial Integration and Consumption Smoothing. Economic Journal 121(553), 678–706.

Kahneman, D., Tversky, A., 1979. Prospect Theory: An Analysis of Decision under Risk. Econometrica 47(2), 263–291.

Kalemli-Ozcan, S., Sørensen, B.E., Yosha, O., 2003. Risk Sharing and Industrial Specialization: Regional and International Evidence. American Economic Review 93(3), 903–918.

Kose, A.M., Otrok, C., Whiteman, C.H., 2008. Understanding the evolution of world business cycles. Journal of International Economics 75(1), 110–130.

Kose, A.M., Prasad, E., Terrones, M.E., 2003. How Does Globalization Affect the Synchronization of Business Cycles?. American Economic Review 93(2), 57 62.

Kose, A.M., Prasad, E., Rogoff, K.S., Wei, S.J., 2006. Financial Globalization: A Reappraisal. NBER Working Paper No. 12484.

Kőszegi, B., Rabin, M., 2006. A Model of Reference-Dependent Preferences. The Quarterly Journal of Economics 121(4), 1133–1165.

Kraay, A., Ventura, J., 2002. Trade integration and risk sharing. European Economic Review 46(6), 1023–1048.

Lane, P.R., Milesi-Ferretti, G.M., 2007. The external wealth of nations mark II: Revised and extended estimates of foreign assets and liabilities, 1970-2004. Journal of International Economics 73(2), 223-250.

Lewis, K.K., 1996. What can explain the apparent lack of international consumption risksharing?. Journal of Political Economy 104(2), 267–297.

Livshits, I., MacGee, J., Tertilt, M., 2007. Consumer bankruptcy: A fresh start. American Economic Review 97(1), 402–418.

Lucas, R., 1982. Interest rates and currency prices in a two-country world. Journal of Monetary Economics 10(3), 335–359.

Melitz, J., Zumer, F., 1999. Interregional and international risk-sharing and lessons for EMU. Carnegie-Rochester Conference Series on Public Policy 51(1), 149–188.

Modigliani, F., 1966. The Life Cycle Hypothesis of Saving, the Demand for Wealth and the Supply of Capital. Social Research 33(2), 160–217.

Primiceri, G.E., van Rens, T., 2009. Heterogeneous life-cycle profiles, income risk and consumption inequality. Journal of Monetary Economics 56(1), 20–39.

Sauermann, H., Selten, R., 1962. Anspruchsanpassungtheorie der Unternehmung. Zeitschrift für die gesamte Staatswissenschaft/Journal of Institutional and Theoretical Economics 118(4), 577–597.

Sørensen, B.E., Yosha, O., 1998. International risk sharing and European monetary unification. Journal of International Economics 45(2), 211–238.

Sørensen, B.E., Wu, Y.T., Yosha, O., Zhu, Y., 2007. Home bias and international risk sharing: Twin puzzles separated at birth. Journal of International Money and Finance 26(4), 587–605.

Sugden, R., 2003. Reference-dependent subjective expected utility. Journal of Economic Theory 111(2), 172–191.

Townsend, R.M., 1994. Risk and Insurance in Village India. Econometrica 62(3), 539–591.

Tversky, A., Kahneman, D., 1991. Loss Aversion in Riskless Choice: A Reference-Dependent Model. The Quarterly Journal of Economics 106(4), 1039–1061.

Van Praag, B., 1971. The welfare function of income in Belgium: An empirical investigation. European Economic Review 11(3), 337 369.

Van de Stadt, H., Kapteyn, A., Van de Geer, S., 1985. The Relativity of Utility: Evidence from Panel Data. The Review of Economics and Statistics 67(2), 179–187.

Van Wincoop, E., 1999. How big are potential welfare gains from international risksharing?. Journal of International Economics 47(1), 109–135.

Venti, S.F., Wise, D.A., 2001. Aging and housing equity: Another look. NBER Working Paper No. 8608.

Zhang, H.H., 1997. Endogenous borrowing constraints with incomplete markets. Journal of Finance 52(5), 2187–2209.

Appendix A – Measures of Household Heterogeneity

This Appendix briefly explains the idea behind the inclusion of each of the measures of household heterogeneity that enter the empirical analysis in Section 4.3:

- Does the household receive capital income? – Yes/No. To be able to reap gains from portfolio diversification, households should have invested in financial products, for which the presence of capital income is a sufficient condition. Hence, this is the key channel through which we would expect a household to directly profit from financial integration. However, not all households receive their portfolio returns as capital income (e.g., in the case of reinvestments) and thus other, broader definitions of financial market exposure might also be helpful.

- Does the household work in the banking sector? – Yes/No. Households with members who work in the banking sector should exhibit a higher degree of financial literacy than the average household in the sample and thus would be more likely to have invested in financial markets as well. At the same time, these households should be especially aware of the benefits of portfolio diversification and thus they would be more inclined to take advantage of additional investment opportunities abroad.

- Does the household own a house? – Yes/No. This criterion is a simple proxy for household wealth. In order to observe significant gains from financial investments, the investments have to be sufficiently large. The presence of housing wealth, for example, could therefore be an indication of the presence of other types of wealth in the household, such as financial wealth.

- Does the household earn an above-average income? – Yes/No. As in the case of house ownership, an above-median household income could be another indication of a wealthy household and thus sufficiently large financial investments.

- Does the household have a mortgage? – Yes/No. Finally, I also take a look at the liability side of the household balance sheet and examine whether households with a mortgage profit more or less in the presence of financial integration. A potential channel underlying this relationship could be that mortgage interest rates are cheaper in a world that is more financially integrated.

Appendix B – Tables

Table 5: Summary Statistics for the "Ability to Make Ends Meet"

Description	ECHP			EU-SILC		
Aggregated:	Mean	Std.	Obs.	Mean	Std.	Obs.
Overall	3.52	1.19	121,659	3.46	1.28	94,515
Between		0.97			1.14	
Within		0.68			0.57	
By Country:	Mean	Std.	Obs.	Mean	Std.	Obs.
Austria	3.55	1.17	6,840	3.94	1.08	6,294
Belgium	3.99	1.07	6,685	4.03	1.16	5,274
Bulgaria				2.18	0.94	1,257
Cyprus				2.71	1.19	1,671
Czech Rep.				3.15	1.08	9,396
Denmark	4.07	1.15	6,818	4.75	1.08	3,729
Estonia				3.56	0.82	5,394
Finland	3.77	1.14	6,760	4.13	1.17	5,265
France	3.57	1.00	14,987	3.08	1.00	1,389
Greece	2.66	1.16	11,578	2.55	1.13	2,250
Hungary				2.75	0.98	5,607
Iceland				4.01	1.24	2,169
Italy	3.35	1.06	16,590			
Latvia				2.72	1.04	1,797
Lithuania				3.06	0.86	1,911
Netherlands	4.41	1.06	10,906	4.42	1.23	4,701
Poland				2.74	1.16	10,998
Portugal	2.84	0.99	13,678	2.72	1.13	1,314
Slovak Rep.				2.97	0.98	4,062
Slovenia				3.28	1.08	2,841
Spain	3.24	1.17	11,879	3.30	1.20	7,755
Sweden				4.24	1.22	5,238
United Kingdom	3.92	0.95	14,938	3.97	1.15	4,203

Table 6: Summary Statistics ECHP

Variable	*Obs.*	*Mean*	*Std. Dev.*	*Min*	*Max*
Key Variables (all in Logs)					
Total Income	119531	9.4	0.6	7.1	10.9
Mean of Labor Income	119531	9.3	0.6	6.9	10.7
Std. of Labor Income	119531	7.7	0.8	3.5	10.9
Control Variables					
Age of Household Head	119531	43.5	10.7	17	83
Age Squared	119531	2003.8	973.1	289	6889
Dummy for Being Married	119531	0.7	0.4	0	1
Dummy for Bad Health	119531	0.0	0.2	0	1
Dummy for Being Male	119531	0.7	0.4	0	1
Dummy for Higher Education	119531	0.6	0.5	0	1
Dummy for Self-Employment	119531	0.2	0.4	0	1
Stock Market Capitalization	119531	0.7	0.5	0.1	2.7
Trade Openness	119531	66.0	25.1	41.6	153.6
Inflation Rate	119531	2 6	1.8	0.5	10.9
Unemployment Rate	119531	9.6	4.4	3.1	24.1
Measures of Financial Integration					
Gross Financial Integration	119531	253.3	143.3	89.9	601.3
Portfolio Equity Assets	119531	15.0	15.4	0.5	65.7
Portfolio Debt Assets	112915	22.5	16.4	2.0	74.2
Portfolio Debt Liabilities	112915	30.5	12.1	10.6	73.8
Bank and Other Assets	112915	52.6	33.5	20.6	139.1
Bank and Other Liabilities	112915	61.4	41.5	24.7	166.5
Investment Fund Shares	119531	1.5	2.4	-0.1	13.8
Interest Rate Spread	104398	16.5	9.8	0.7	42.9
Measures of Household Exposure					
Dummy for Owning a House	119505	0.8	0.4	0	1
Dummy for Owning a Car	119114	0.9	0.3	0	1
Dummy for Capital Income	119531	0.5	0.5	0	1
Dummy for Mortgage Debt	91171	0.5	0.5	0	1
Dummy for 50th Percentile of Total Income	119531	0.5	0.5	0	1
Dummy for 10th Percentile of Total Income	119531	0.2	0.4	0	1
Dummy for Consumer Debt	116299	0.3	0.5	0	1
Dummy for Working in the Financial Sector	113955	0.0	0.2	0	1
Dummy for Working in the Real Estate Sector	113955	0.1	0.2	0	1
Dummy for Owning a Second House	119067	0.1	0.3	0	1

Table 7: Summary Statistics EU-SILC

Variable	*Obs.*	*Mean*	*Std. Dev.*	*Min*	*Max*
Key Variables (all in Logs)					
Total Income	93486	9.4	0.7	7.4	11.1
Mean of Labor Income	93486	9.4	0.9	6.2	11.3
Std. of Labor Income	93486	7.7	1.2	2.4	11.1
Control Variables					
Age of Household Head	93486	43.2	11.2	17	74
Age Squared	93486	1990.3	975.5	289	5476
Dummy for Being Married	93486	0.6	0.5	0	1
Dummy for Bad Health	93486	0.0	0.2	0	1
Dummy for Being Male	93486	0.6	0.5	0	1
Dummy for Higher Education	93486	0.8	0.4	0	1
Stock Market Capitalization	93486	0.7	0.4	0.1	2.0
Trade Openness	93486	109.7	36.3	54.8	170.5
Inflation Rate	93486	3.2	2.3	0.1	15.3
Unemployment Rate	93486	7.3	3.0	1.0	17.7
Measures of Financial Integration					
Gross Financial Integration	79257	402.1	263.2	102.0	1160.3
Portfolio Equity Assets	79257	25.3	25.3	0.4	85.2
Portfolio Debt Assets	79257	37.6	33.9	1.0	119.4
Portfolio Debt Liabilities	79257	53.6	46.3	4.8	297.1
Bank and Other Assets	79257	64.2	65.1	10.9	268.0
Bank and Other Liabilities	79257	80.1	67.7	18.8	294.4
Investment Fund Shares	85941	0.6	0.9	-0.1	4.3
Interest Rate Spread	84696	11.9	9.1	0.0	43.3
Measures of Household Exposure					
Dummy for Owning a House	93469	0.8	0.4	0	1
Dummy for Owning a Car	93423	0.8	0.4	0	1
Dummy for Capital Income	88967	0.4	0.5	0	1
Dummy for Mortgage Debt	77338	0.3	0.5	0	1
Dummy for 50th Percentile of Tot. Inc.	93486	0.5	0.5	0	1
Dummy for 10th Percentile of Tot. Inc.	93486	0.2	0.4	0	1

Table 8: Baseline Specification – Full Table: ECHP

Dependent Variable: "Ability to Make Ends Meet"	(1)	(2)	(3)	(4)	(5)	(6)
Total Income	0.437***	0.449***	0.441***	0.432***	0.266***	0.194***
	(0.00)	*(0.00)*	*(0.00)*	*(0.00)*	*(0.00)*	*(0.00)*
Mean of Labor Income	0.498***	0.471***	0.438***	0.425***	0.636***	
	(0.00)	*(0.00)*	*(0.00)*	*(0.00)*	*(0.00)*	
Std. of Labor Income	-0.036***	-0.036***	-0.037***	-0.034***	-0.028***	
	(0.00)	*(0.00)*	*(0.00)*	*(0.00)*	*(0.00)*	
Dummy for Being Male	0.019	0.027**	0.020	0.021	0.013	
	(0.16)	*(0.04)*	*(0.13)*	*(0.11)*	*(0.32)*	
Dummy for Higher Education	0.112***	0.099***	0.125***	0.147***	0.067***	
	(0.00)	*(0.00)*	*(0.00)*	*(0.00)*	*(0.00)*	
Age of Household Head	-0.039***	-0.034***	-0.036***	-0.033***	-0.030***	-0.033***
	(0.00)	*(0.00)*	*(0.00)*	*(0.00)*	*(0.00)*	*(0.00)*
Age Squared	0.001***	0.000***	0.000***	0.000***	0.000***	0.000**
	(0.00)	*(0.00)*	*(0.00)*	*(0.00)*	*(0.00)*	*(0.02)*
Dummy for Being Married	0.092***	0.091***	0.095***	0.083***	0.065***	0.059***
	(0.00)	*(0.00)*	*(0.00)*	*(0.00)*	*(0.00)*	*(0.00)*
Dummy for Bad Health	-0.269***	-0.277***	-0.276***	-0.283***	-0.151***	-0.110***
	(0.00)	*(0.00)*	*(0.00)*	*(0.00)*	*(0.00)*	*(0.00)*
Dummy for Self-Employment	0.186***	0.203***	0.248***	0.251***	0.107***	0.044**
	(0.00)	*(0.00)*	*(0.00)*	*(0.00)*	*(0.00)*	*(0.02)*
Stock Market Capitalization	0.257***	0.363***	0.118***	0.111***	0.257***	0.099***
	(0.00)	*(0.00)*	*(0.00)*	*(0.00)*	*(0.00)*	*(0.00)*
Trade Openness	0.006***	0.006***	0.006***	0.006***	0.006***	0.004***
	(0.00)	*(0.00)*	*(0.00)*	*(0.00)*	*(0.00)*	*(0.00)*
Inflation Rate	-0.037***	-0.052***	-0.006*	-0.011***	-0.021***	-0.016***
	(0.00)	*(0.00)*	*(0.05)*	*(0.00)*	*(0.00)*	*(0.00)*
Unemployment Rate	0.000	-0.003**	-0.027***	-0.027***	-0.013***	-0.031***
	(0.79)	*(0.03)*	*(0.00)*	*(0.00)*	*(0.00)*	*(0.00)*
Time Fixed Effects	No	Yes	Yes	Yes	Yes	Yes
Country Fixed Effects	No	No	Yes	No	No	No
Regional Fixed Effects	No	No	No	Yes	No	No
Random Effects	No	No	No	No	Yes	No
Household Fixed Effects	No	No	No	No	No	Yes
Observations	119,531	119,531	119,531	108,695	119,531	121,659
Households	17,625	17,625	17,625	16,077	17,625	17,929
Countries	11	11	11	10	11	11
R-squared	0.32	0.33	0.35	0.33	0.32	0.02

Table 9: Baseline Specification – Full Table: EU-SILC

Dependent Variable: "Ability to Make Ends Meet"	(1)	(2)	(3)	(4)	(5)	(6)
Total Income	0.422***	0.424***	0.503***	0.493***	0.228***	0.067***
	(0.00)	*(0.00)*	*(0.00)*	*(0.00)*	*(0.00)*	*(0.00)*
Mean of Labor Income	0.341***	0.328***	0.320***	0.322***	0.462***	
	(0.00)	*(0.00)*	*(0.00)*	*(0.00)*	*(0.00)*	
Std. of Labor Income	-0.011**	-0.014***	-0.032***	-0.029***	-0.019***	
	(0.04)	*(0.01)*	*(0.00)*	*(0.00)*	*(0.00)*	
Dummy for Being Male	0.042***	0.043***	0.067***	0.063***	0.042***	
	(0.00)	*(0.00)*	*(0.00)*	*(0.00)*	*(0.00)*	
Dummy for Higher Education	0.299***	0.315***	0.203***	0.200***	0.278***	
	(0.00)	*(0.00)*	*(0.00)*	*(0.00)*	*(0.00)*	
Age of Household Head	-0.067***	-0.064***	-0.053***	-0.049***	-0.069***	-0.052***
	(0.00)	*(0.00)*	*(0.00)*	*(0.00)*	*(0.00)*	*(0.01)*
Age Squared	0.001***	0.001***	0.001***	0.001***	0.001***	0.000
	(0.00)	*(0.00)*	*(0.00)*	*(0.00)*	*(0.00)*	*(0.40)*
Dummy for Being Married	0.094***	0.097***	0.132***	0.128***	0.082***	0.042*
	(0.00)	*(0.00)*	*(0.00)*	*(0.00)*	*(0.00)*	*(0.08)*
Dummy for Bad Health	-0.436***	-0.438***	-0.425***	-0.410***	-0.281***	-0.188***
	(0.00)	*(0.00)*	*(0.00)*	*(0.00)*	*(0.00)*	*(0.00)*
Stock Market Capitalization	0.390***	0.438***	0.340***	0.313***	0.462***	0.311***
	(0.00)	*(0.00)*	*(0.00)*	*(0.00)*	*(0.00)*	*(0.00)*
Trade Openness	0.005***	0.005***	0.004***	0.004***	0.005***	-0.000
	(0.00)	*(0.00)*	*(0.00)*	*(0.00)*	*(0.00)*	*(0.69)*
Inflation Rate	-0.044***	-0.030***	0.005*	0.005	-0.017***	0.005*
	(0.00)	*(0.00)*	*(0.08)*	*(0.12)*	*(0.00)*	*(0.06)*
Unemployment Rate	-0.021***	-0.024***	-0.020***	-0.022***	-0.028***	-0.028***
	(0.00)	*(0.00)*	*(0.00)*	*(0.00)*	*(0.00)*	*(0.00)*
Time Fixed Effects	No	Yes	Yes	Yes	Yes	Yes
Country Fixed Effects	No	No	Yes	No	No	No
Regional Fixed Effects	No	No	No	Yes	No	No
Random Effects	No	No	No	No	Yes	No
Household Fixed Effects	No	No	No	No	No	Yes
Observations	93,486	93,486	93,486	81,825	93,486	94,515
Households	31,162	31,162	31,162	27,275	31,162	31,505
Countries	22	22	22	19	22	22
R-squared	0.33	0.34	0.40	0.39	0.33	0.01

Table 10: Additional Specifications – The Effect of Financial Integration Across Households

Top Panel: ECHP

Dependent Variable: "Ability to Make Ends Meet"	Work in Real Estate Sector	Car Owner-ship	Owner of a Second House	Top 10% of HH Income	Consumer Debt Holder
Sign of the triple interaction term	neg.	neg.	neg.	neg.	pos.
Associated p-value	*(0.98)*	*(0.03)*	*(0.11)*	*(0.08)*	*(0.27)*
Part. marg. effect, high FI, exp.	0.11***	0.17***	0.14***	0.11***	0.05***
Part. marg. effect, low FI, exp.	0.06	0.12***	0.11***	0.08***	0.02
Part. marg. effect, high FI, non-exp.	0.08***	0.16***	0.10***	0.11***	0.06***
Part. marg. effect, low FI, non-exp.	0.04***	0.06***	0.04***	0.04***	0.03***
Memo: Diff. for exp. HH	*0.05*	*0.05*	*0.03*	*0.03*	*0.03*
Memo: Diff. for non-exp. HH	*0.04*	*0.10*	*0.06*	*0.07*	*0.03*
Difference of the differential effects	0.01	-0.05**	-0.03	-0.04*	0
Observations	103,528	118,751	118,546	121,659	99,480
Households	15,135	17,513	17,483	17,929	14,759
Countries	11	11	11	11	10
R-squared	0.02	0.02	0.02	0.02	0.02

Bottom Panel: EU-SILC

Dependent Variable: "Ability to Make Ends Meet"	Work in Real Estate Sector	Car Owner-ship	Owner of a Second House	Top 10% of HH Income	Consumer Debt Holder
Sign of the triple interaction term	-	pos.	-	pos.	-
Associated p-value	-	*(0.52)*	-	*(0.38)*	-
Part. marg. effect, high FI, exp.	-	0.14***	-	0.14***	-
Part. marg. effect, low FI, exp.	-	0.06**	-	0.04*	-
Part. marg. effect, high FI, non-exp.	-	0.10**	-	0.12***	-
Part. marg. effect, low FI, non-exp.	-	0.03**	-	0.04***	-
Memo: Diff. for exp. HH	-	*0.08*	-	*0.10*	-
Memo: Diff. for non-exp. HH	-	*0.07*	-	*0.08*	-
Difference of the differential effects	-	0.01	-	0.02	-
Observations	-	83,965	-	84,031	-
Households	-	33,459	-	33,466	-
Countries	-	22	-	22	-
R-squared	-	0.02	-	0.02	-

Table 11: Robustness Approach – Baseline Specification: EU-SILC

Dependent Variable:	(1a)	(1b)	(2a)	(2b)	(3a)	(3b)
"Ability to Make Ends Meet"	Low Std.	High Std.	Low Std.	High Std.	Low Std.	High Std.
Total Income	0.921***	0.638***	1.020***	0.654***	0.043	0.069***
	(0.00)	*(0.00)*	*(0.00)*	*(0.00)*	*(0.13)*	*(0.00)*
Constant	3.581***	3.503***	3.584***	3.517***	3.574***	3.391***
	(0.00)	*(0.00)*	*(0.00)*	*(0.00)*	*(0.00)*	*(0.00)*
Time Fixed Effects	No	No	Yes	Yes	Yes	Yes
Country Fixed Effects	No	No	Yes	Yes	No	No
Regional Fixed Effects	No	No	No	No	No	No
Random Effects	No	No	No	No	No	No
Household Fixed Effects	No	No	No	No	Yes	Yes
Observations	45,948	47,538	45,948	47,538	45,948	47,538
Households	15,316	15,846	15,316	15,846	15,316	15,846
Countries	22	22	22	22	22	22
R-squared	0.34	0.30	0.41	0.37	0.01	0.02

Table 12: Robustness Approach – Financial Integration: EU-SILC

Top Panel: Low Labor Income Risk

Dependent Variable: "Ability to Make Ends Meet"	Gross Financial Integration	Portfolio Equity Assets	Portfolio Debt Assets	Portfolio Debt Liabilities	Bank and Other Assets	Bank and Other Liabilities	Interest Rate Spread	Inv. Fund Shares of Households	Foreign Holdings of Households
Total Income	0.016	0.007	0.012	0.010	0.016	0.014	0.027	0.037	0.038
	(0.64)	*(0.83)*	*(0.73)*	*(0.76)*	*(0.62)*	*(0.68)*	*(0.38)*	*(0.24)*	*(0.33)*
Financial Integration	0.000**	0.013***	0.006***	-0.001	0.002***	0.002***	0.044***	0.007**	0.007
(see column label)	*(0.03)*	*(0.00)*	*(0.00)*	*(0.53)*	*(0.00)*	*(0.00)*	*(0.00)*	*(0.03)*	*(0.45)*
Observations	38,676	38,676	38,676	38,676	38,676	38,676	41,451	41,697	26,967
Households	15,479	15,479	15,479	15,479	15,479	15,479	13,817	13,899	8,989
Countries	20	20	20	20	20	20	19	17	11
R-squared	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01

Bottom Panel: High Labor Income Risk

Dependent Variable: "Ability to Make Ends Meet"	Gross Financial Integration	Portfolio Equity Assets	Portfolio Debt Assets	Portfolio Debt Liabilities	Bank and Other Assets	Bank and Other Liabilities	Interest Rate Spread	Inv. Fund Shares of Households	Foreign Holdings of Households
Total Income	0.060***	0.058***	0.058***	0.057***	0.061***	0.061***	0.065***	0.065***	0.071***
	(0.00)	*(0.00)*	*(0.00)*	*(0.00)*	*(0.00)*	*(0.00)*	*(0.00)*	*(0.00)*	*(0.00)*
Financial Integration	0.001**	0.010***	0.007***	-0.003***	0.003***	0.003***	0.048***	0.018***	0.047***
(see column label)	*(0.02)*	*(0.00)*	*(0.00)*	*(0.00)*	*(0.00)*	*(0.00)*	*(0.00)*	*(0.00)*	*(0.00)*
Observations	40,052	40,052	40,052	40,052	40,052	40,052	42,822	42,999	27,693
Households	15,942	15,942	15,942	15,942	15,942	15,942	14,271	14,333	9,231
Countries	20	20	20	20	20	20	19	17	11
R-squared	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02